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ABSTRACT

This packet of technology learning activity (TLA) materials on introduction to animation for students in grades 6-10 consists of a technology education overview, information on use, and the instructor's and student's sections. The overview discusses the technology education program and materials. Section components are described next. The instructor's section contains background information, suggested activities and resources, and expected learner outcomes. A lesson plan for the 8-day module includes assignments; equipment, tools, and supplies list; and facilities requirements or modifications. The following forms are provided: summary worksheet, pretest, posttest, test answers, and evaluation summary. A bibliography concludes the instructor's section. Topics are as follows: computer-assisted animation, creating story boards, creating still animation, and creating a moving animation. The student section provides materials for each day, including the following: summary of activities, assignments to turn in; goal; vocabulary; expected learner outcomes; list of objectives; list of related Technology Student Association competitive events; and academic and workplace applications reinforced by specific activities in this TLA. An optional activity concludes the student section. (YLB)

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ED 380 595

Technology Learning Activity

Technology Education Series

INTRODUCTION TO ANIMATION

TLA TE-1132

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CIMC

Teacher Edition

Oklahoma Department of
Vocational and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074-4364

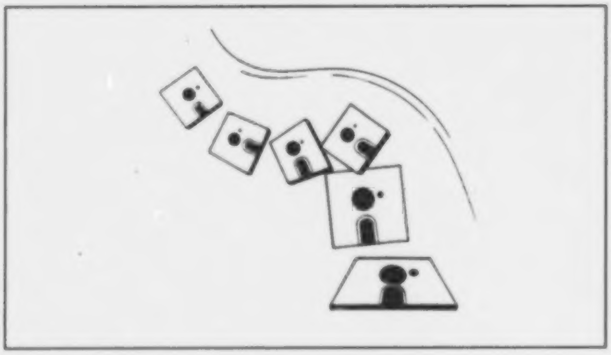
TECHNOLOGY EDUCATION

TECHNOLOGY
LEARNING
ACTIVITY

TE1132

INTRODUCTION TO ANIMATION

Suggested Time: 8 Days



Developed by the
Curriculum and Instructional Materials Center
for the Technology Education Division
Oklahoma Department of Vocational and Technical Education

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FOREWORD

What will be the careers of the future? The workforce of tomorrow will be shaped by the technologies being developed today. Students today need accurate, interesting information on growing technologies in order to make informed decisions about their futures.

It is our hope that this curriculum will help improve the quality of career decisions for our students. Students are introduced to a wide range of current, "cutting-edge" technologies and are encouraged to think critically about how those technologies influence their lives and futures. Today's students do not have to become the victims of "technological illiteracy," but instead can learn to anticipate technological developments and take positive steps to prepare for the future.

Technology Learning Activities provide students with the knowledge and an introduction to the skills they need for a positive learning and career experience. Every generation is faced with learning how to manage technological advances. Information gained through participation in the *Technology Education* program can help students develop a holistic view of technology on which to base their educational and career decisions.

Roy Peters, Jr., Ed.D., State Director
Oklahoma Department of
Vocational and Technical Education

Lynn Hawkins, State Supervisor
Technology Education
Oklahoma Department of
Vocational and Technical Education

PREFACE

We believe that one of the most effective ways to improve education is through the development and implementation of a sound instructional materials system. Technology Education instructional materials represent a new design for CIMC which recognizes the importance of graphic materials in the learning process.

Technology Education instructional materials are designed for 6th through 10th grade students. The design of these materials is based on current research on how people read and gain information from documents. The design is called "New Look" and integrates both graphics and text into a balanced presentation which is easy to use and follow.

Technology Education provides the student a look at what the world will be like in the future based on technologies in use and being developed today. Throughout the Technology Education instructional materials, the students are introduced to "cutting-edge" technologies that they will use and encounter in a working environment later in life. This exposure gives them a wide range of experiences on which to base career decisions.

This publication is intended as a starting point, from which the teacher can innovate, localize, and personalize in order to prepare students for their future. The *Technology Education* series of Technology Learning Activities was written with the realization that we are creating the workforce of tomorrow by how and what we teach about technology today.

Sherry Wietelman, M.S., Curriculum Development Specialist
Curriculum and Instructional Materials Center
Oklahoma Department of
Vocational and Technical Education

Charles F. Kemnitz, President
Atlatl Communications, Inc.

ACKNOWLEDGEMENTS

The Curriculum and Instructional Materials Center (CIMC) extends its appreciation to those individuals who played important roles in the development of Technology Learning Activity materials.

Generous thanks is extended to Lynn Hawkins and Jim Harder, for the time, talent and knowledge they contributed in determining the content of this Technology Learning Activity (TLA). We also extend our thanks to them for writing the pilot TLA upon which this TLA was based and field testing this TLA in the classroom.

We also thank the State Director, Dr. Roy Peters, Jr., and the Assistant State Director, Dr. Charles O. Hopkins, for their continued support throughout this project.

Oklahoma Department of Vocational and Technical Education Technology Education staff who provided leadership and direction on this project also deserve special recognition.

Lynn Hawkins
State Supervisor
Technology Education

Donovan Bowers
Assistant State Supervisor
Technology Education

Harold Holley
Assistant State Supervisor
Technology Education

Special Recognition and gratitude is expressed to Dr. Charles F. Kemnitz who worked with a team of technical writers on this project.

Only through the close cooperation of the Curriculum and Instructional Materials Center staff was this curriculum developed. Sincere thanks are shared with the CIMC coordinators.

John Friedemann
CIMC Coordinator

Lynna Ausburn, Ph.D.
CIMC Development Coordinator

Special recognition and thanks are also extended to other individuals within the Oklahoma Department of Vocational and Technical Education (ODVTE) involved in the development and distribution process: Noel Wilcoxson, Duane "Frosty" Foster and Diane Ensign and their staffs at the ODVTE Print Shop; Bob Davis and staff artist Kathryn Moore for the cover design; Darrel Stiles and his staff in the ODVTE Warehouse for packaging

and coordinating transportation and distribution of these materials; and Rose Primeaux and her staff in Word Processing.

Finally, a big thank you to all ODVTE team members who offer their support on a daily basis in "behind-the-scenes" ways but never seem to be recognized for their contributions: Suzanne Perry and Terri Tomson, CIMC secretaries; Karen Heppel and Shirley Hill, Technology Education secretaries.

Sherry Wietelman, M.S.
Curriculum Development Specialist
Curriculum and Instructional Materials Center
Oklahoma Department of Vocational and Technical Education

TECHNOLOGY EDUCATION OVERVIEW

About the Program

Because the American culture is distinctly characterized as technological, it becomes the function of our schools to give every student an insight into and an understanding of the technological nature of the culture. Technology Education strives to perform this function.

Technology Education in Oklahoma is an instructional program that provides young men and women (grades 6 - 10) with daily, hands-on exploratory experiences and insights into technology and career opportunities so that they can make meaningful occupational and educational choices. It is a program which can enhance the educational experience of all students, whether they are the valedictorian/honor-type student, the middle range/average student, or the student who has found little success in school, namely the at-risk student.

Technology Education acquaints all students with their technological environment so they can make rational decisions about their own lives on a day-to-day basis and participate in controlling their own destiny. The program directs students to related technological and industrial fields, enabling students to realize their full potential and make maximum use of their individual talents in fulfilling career goals in their selected areas of employment.

Technology education capitalizes on the individual's potential for reasoning and problem solving, for imagining and creating, and for constructing and expressing through the use of tools and materials related to technology. It develops content and

TECHNOLOGY EDUCATION OVERVIEW

experiences to contribute to the growth and development of students commensurate with their potential. Thus, Technology Education is a basic and fundamental study for all persons in regard to career explorations and educational opportunities.

Opportunities to develop and apply leadership, social, civic, and technologically related skills are provided through the Technology Student Association (TSA). TSA is the appropriate vocational student organization identified as a teaching tool for teachers to use in assisting students to achieve identified course competencies. Competency-based activities are an integral part of the instructional program.

All Technology Education courses are taught in a one-period block of time (45-55 minutes), with each of the four Technology systems (communication, construction, manufacturing, and transportation, energy and power) being designed to provide a means through which other courses such as math, science, English, and social studies can be applied in a practical manner within a technology-based situation. Teaching across the curriculum is vital to the success of a Technology Education program.

TECHNOLOGY EDUCATION OVERVIEW

About the TLAs

The *Technology Education* series consists of 40 Technology Learning Activities (TLAs) for instruction and a supplemental activities book. Each TLA is divided into two parts: an instructor's guide and a student guide. The instructor's guide provides an overview of Technology Education, a summary of activities and supplies needed for students to complete the Technology Learning Activity, a supplies and materials worksheet for the instructor, an overview of the particular TLA, written exam answer sheets, and evaluation summary for the TLA.

Master copies of the evaluation summary sheets, pretest and posttest, and supplies and materials worksheets are provided with this instructors edition of the TLA. These sheets may be reproduced for classroom use.

All of the TLAs focus on measurable and observable learning outcomes. Instructors are encouraged to supplement, personalize, localize, and motivate with these materials in order to develop a complete teaching/learning process.

TLAs are designed for use in more than one class period of instruction. Careful study of each TLA by the instructor will help her or him determine the following:

- Skills to demonstrate
- Supplies and equipment needed

TECHNOLOGY EDUCATION OVERVIEW

- Amount of time needed for student practice
- Workstation Bookshelf, Instructors Reference Materials, and a bibliography are provided for supplemental resources
- Supplementary materials, including print and non-print media to order
- Resource people to contact
- Facility modifications which may be necessary to administer the TLA

Each TLA is based on performance objectives. Performance objectives are specific, stating the performances necessary to meet the goal of the TLA.

The overall goal of the unit tells what the student should be able to do and what standard will be used to determine whether the student has achieved competency. The specific objectives outline the sequence of the competencies required to meet the TLA goal. The competencies may be either cognitive, requiring knowledge only, or psychomotor, requiring knowledge and skill.

TECHNOLOGY EDUCATION OVERVIEW

About Ordering TLAs

Additional TLAs in the *Technology Education* series may be ordered through the Oklahoma State Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1500 West Seventh Avenue, Stillwater, OK 74074-4364. Phone 1-800-522-5810.

NOTE: The 1100- and 1200-series numbers given on the next page are for ordering TLA Instructor's Editions; to order Student Editions, change the first two numbers to 31 (for 8-Day TLAs) or 32 (for 6-Week TLAs).

TECHNOLOGY EDUCATION OVERVIEW

8-DAY TLAs

TLA Title	Order No.
Aerospace and Flight	TE1117
Agricultural Education	TE1123
Audiovisual Programming	TE1131
CAD — Autocad Release 10	TE1114
Career Search	TE1104
Drafting	TE1134
Electricity — Principles and Applications	TE1105
Electronic Publishing	TE1135
Electronics (CES)	TE1106
Fluidics Technology	TE1116
Health Occupations	TE1124
Home Economics	TE1125
Introduction to VoTech	TE1122
Introduction to Animation	TE1132
Keyboarding and Computer Application	TE1115
Laser/Fiber Optics/Holography	TE1129
Lasers Technology	TE1103
Marketing Education	TE1126
Material Processes — Plastics	TE1133
NASA Aerospace-Spacelink	TE1111
Photography	TE1130
Problem Solving	TE1110
Research and Design	TE1101
Residential Construction	TE1121
Robotics — Control Technology	TE1112
Robotics — ProArm	TE1113
Safety Design Briefs	TE1107
Structural Engineering	TE1102
Synergetic Technology	TE1120
Technical Report Writing	TE1118
Technology Challenge	TE1109
Thermal Screen Printing	TE1119
Trade and Industrial Education	TE1127
TSA Leadership	TE1108
Vocational Business	TE1128

6-WEEK TLAs

TLA Title	Order No.
Animator	TE1203
CAD/Board Drafting	TE1201
Control Technology	TE1202
Electronics/Electricity/Robotics	TE1204
Electronic Publisher	TE1205

TECHNOLOGY EDUCATION OVERVIEW

Corrections and Suggestions

CIMC wants to provide Technology Education instructors and students materials that are accurate and effective. Although the CIMC strives to maintain the highest standards of development and production, oversights occasionally do occur. If you find any errors in this or other CIMC publications or have suggestions for improving their usefulness, please notify the CIMC staff. One easy way of pointing out errors is to make a photocopy of the affected page and indicate the correction on the copy. Mail this information to the CIMC, where it will be used to correct the publication before the materials are reprinted.

To ensure that the material is updated on a timely basis, notify the CIMC of necessary corrections as soon as possible. Do not assume that someone else will notice the error and inform the CIMC; other users may be making the same assumption. Please send corrections and recommendations for improving this publication to the following address:

Curriculum Development Coordinator
Curriculum and Instructional Materials Center
Oklahoma Department of Vocational and
Technical Education
1500 West Seventh Avenue
Stillwater, Oklahoma 74074-4364

USING THIS PUBLICATION

INSTRUCTOR'S SECTION

Background Information

The background information component provides instructors with basic information about the subject of the TLA. Instructors are encouraged to use suggested resources for additional information on the specific technology used in each TLA.

Expected Learner Outcomes

There are 19 Expected Learner Outcomes for the *Technology Education* series. Not every TLA fulfills all 19 Expected Learner Outcomes, so outcomes specific to each TLA are listed in the Instructors Section and in the Students Section. The 19 Expected Learner Outcomes for the *Technology Education* series are:

- The student will know and appreciate the importance of technology and technological literacy.
- The student will explore career opportunities so they can make meaningful occupational choices.
- The student will explore future educational opportunities so they can make meaningful educational choices.
- The student will apply problem solving and critical thinking techniques.
- The student will apply math, science, reading, and other school subjects in a practical situation.
- The student will develop keyboarding and computer literacy skills.

USING THIS PUBLICATION

INSTRUCTOR'S SECTION

- The student will develop basic skills in the safe and proper use of tools, machines, materials, processes, and technical concepts.
- The student will recognize and develop individual talents.
- The student will think logically and sequentially.
- The student will develop leadership, creative abilities, positive self-concepts, and individual potential in a technological society.
- The student will become a more sophisticated consumer of the goods and services of a technological society.
- The student will adjust to a changing technological environment.
- The student will develop an understanding and the ability to adapt to those technological forces that influence life in the 21st Century.
- The student will develop an understanding of economic development.
- The student will communicate by making clear and relevant points through the development of mental process skills.

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INSTRUCTOR'S SECTION

- The student will apply design, imagination, and creative abilities.
- The student will learn applications of lifelong learning skills.
- The student will think globally and act locally.
- The student will explore the organization and management systems of business and industry.

Suggested Activities

The suggested activities component is to assist during the preparation stage of the teaching/learning process. The activities provide suggestions for preparation and evaluation during the instructional process. The instructor should read the suggested activities before assigning the TLAs to allow time to obtain supplemental materials, prepare audiovisual materials, and contact outside resource persons. Duties of the instructor will vary according to the particular TLA.

USING THIS PUBLICATION

INSTRUCTOR'S SECTION

Suggested Resources

Suggested resources, include people, and print and non-print media that may be used with the TLA. References used during the development of each TLA are also provided. The instructor can use suggested resources and TLA references to supplement her or his knowledge of the subject to help students with particular interests or objectives in the area covered. Please note that suggested resources and references listed in this publication existed when this publication was written. CIMC assumes no responsibility for providing these materials and cannot ensure the availability of these materials as individual vendors, manufacturers, and publishers may discontinue these products at any time.

Instructional Sequence

This component provides instructors with daily lesson plans for the TLA. Included in the instructional sequence component are suggested daily assignments and equipment, tools, and supplies that will be needed for each student. A column for facility requirements or modifications is provided for each instructor. This component is provided as a guide to plan for and monitor students' progress through the TLA.

Equipment, Tools, and Supplies: Summary Worksheet

This component is provided as a planning tool for instructors. It provides instructors with a list of the necessary equipment, tools and supplies to support student activities and provides specific information for budgeting purposes.

USING THIS PUBLICATION	INSTRUCTOR'S SECTION
Pretest and Posttest	These components provide criterion-referenced evaluation of the objectives listed in each TLA. If objectives or activities have been added, deleted, or modified, appropriate changes should be made on the tests.
Test Answers	This component is provided to assist instructors in evaluating student performance on written tests.
Evaluation Summary	This component is provided to assist instructors in summarizing the performance of each student on an individual basis. The evaluation summary forms are also provided as photocopy masters for the instructors use.

USING THIS PUBLICATION

STUDENT'S SECTION

Introduction

Daily activities are the step-by-step procedures students will follow to complete the learning experience. Each TLA is organized by daily tasks and activities. Students are able to pace their progress through the TLA by referring to the activities for the day.

Within the daily activity pages are components common to all TLAs.

Summary of Activities

A Summary of Activities page begins each day of the TLA. This page provides several important pieces of information for both the student and instructor.

❶ In the left column this page provides the student with a list of activities to be accomplished that day.

❷ In the right column the major Academic and Workplace Application which applies to that day's activities is graphically indicated with a standard icon.

❸ Below the icon is a list of specific skills reinforced during that day's activities.

USING THIS PUBLICATION	STUDENT'S SECTION
Pretest Instructions	The students are required to take a Pretest as one of the first day's activities. The instructions for the Pretest are given in this section.
Assignments to Turn In	Day One includes a list of all assignments the students are expected to turn in during or at completion of the TLA. This list includes all tests, activities, and products covered in the TLA.
Goal	On Day One, following the assignments checklist, is a concise statement of the overall goal of the TLA. This statement summarizes the purpose for completing the TLA and encourages the student to think about the broader implications of the learning experience.
Words You Should Know	The first day's activities includes a glossary of unfamiliar technical terms used in the TLA. Often these terms are necessary for the student in order to accurately follow instructions in the activity procedures. The students should be encouraged to review this glossary and refer to it often during the course of the TLA.

USING THIS PUBLICATION

STUDENT'S SECTION

Expected Learner Outcomes Reinforced by this TLA	As stated in the guide to the Instructors Section, there are 19 identified Expected Learner Outcomes associated with the *Technology Education* series. This section of Day One activities lists the Expected Learner Outcomes that specifically apply to the TLA. A student who reviews this list will gain a better understanding of the scope of experiences and skills to be gained from the TLA.
Objectives	Each TLA is made up of a set of measurable objectives. In this section on Day One, students are given a list of all the objectives addressed in the TLA. This list can serve to introduce students tc the "flow" of the TLA as they build introductory skills in a technology.
Related TSA Competitive Event(s)	Each TLA may be used by students to begin work toward completion of a Technology Student Association competitive event. Some TLAs are tied to a specific TSA event; other TLAs may be used with several events. This Day One section gives the student and instructor a list of appropriate TSA events which the TLA may support. TSA competitive events promote leadership development, and an understanding that winning isn't everything but involvement is. Events are staged at Local, Regional, State, and National levels through which the student may progress.

USING THIS PUBLICATION

STUDENT'S SECTION

Academic and Workplace Applications

The curricular content and activities found in this Technology Learning Activity help students apply academic and workplace competencies. These competencies include: Reading Skills, Writing Skills, Mathematics Skills, Science Skills, Oral Communications Skills, Interpersonal or Relating Skills, Creative Thinking and Problem Solving Skills, Employability Skills, and Social Studies Skills.

Preparing students to enter successfully into today's world ...

Preparing students to enter successfully into today's world of work offers vocational education a substantial challenge. The contemporary workplace is characterized by constant and rapid technological change and by increasing job complexity and skill intensity. Due to rapid technological advancement, the half-life of work skills is now reduced to a bare three to five years. Out of this new workplace environment has arisen a growing national awareness of the critical importance of an American workforce armed with the skills necessary to survive in a competitive economy.

... emergence of a renewed emphasis on basic academic skills ...

One result of this national awareness has been the emergence of a renewed emphasis on basic academic skills in all areas of education. Pressure to increase academic skill development is being placed on education by both legislative action and industry mandate. The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 sets stringent academic and workplace skill requirements for vocational education. State legislatures are increasingly requiring basic skills accountability by teachers and school administrators.

USING THIS PUBLICATION

STUDENT'S SECTION

... expected learner outcomes are being implemented with increasing frequency.

Graduation exams, minimum competency requirements, and expected learner outcomes are being implemented with increasing frequency. In addition, business and industry are delivering the message clearly to educators that vocational competence now requires increased strength in academic and workplace skills.

The issue of basic skills ... was successfully addressed in a national three-year study ...

The issue of the basic skills currently required in the work place was very successfully addressed in a national three-year study conducted jointly by the American Society of Training and Development (ASTD) and the U.S. Department of Labor (DOL). The findings of this study were published in 1990 in the book, *Workplace Basics: The Essential Skills Employers Want.*

... research indicates clearly that American employers ... need a variety of skills ...

The ASTD/DOL research indicates clearly that American employers have discovered that their workforces need a variety of skills that include, but are not limited to, the classic academic trio of reading, writing, and computation. Employers now are also looking for competence in areas such as "learning to learn," problem solving and critical thinking, interpersonal and teamwork skills, oral communication and listening techniques, and the social and personal management skills that demonstrate a capacity for independence and responsibility in on-the-job performance.

USING THIS PUBLICATION

STUDENT'S SECTION

... business and industry have expanded and re-defined "workplace basics."

It is clear that the requirements of today's business and industry have expanded and re-defined "workplace basics." It is in line with this re-definition, and with the competency requirements of current education legislation, that the Oklahoma Department of Vocational and Technical Education has chosen to address "basic skills" in the instructional materials produced by its Curriculum and Instructional Materials Center.

CIMC materials contain information and activities which develop academic and workplace application competencies ...

It is not a new development for CIMC materials to contain information and activities which develop academic and workplace application competencies in students undertaking vocational programs. What is new is the specific marking, or flagging, of items in our instructional materials that address academic and workplace application skills.

To assist teachers and students in identifying activities which promote academic and workplace skills ...

To assist teachers and students in identifying activities which promote academic and workplace skills development, CIMC has implemented a marking system which uses simple graphic symbols, or icons. These icons are located in the right margins of Activity Sheets. The following is an explanation of the icons and the kinds of academic and workplace application activities they indicate.

USING THIS PUBLICATION

READING SKILLS: Skills involving use of print resource material for obtaining and applying information.

WRITING SKILLS: Skills involving written communication of processes, information, or ideas.

MATHEMATICS SKILLS: Skills involving computation, calculation, and interpretation of numerical data.

STUDENT'S SECTION

Current vocational education literature indicates that functional literacy as a workplace basic needs to be defined in terms of reading competencies actually required for job performance. The activities identified with this icon as addressing reading skills in CIMC materials deal specifically with developing reading skills in an applied, job-related context. These range from general information-gathering activities to tasks requiring use of specific technical reference materials. Many contain a "learning to learn" aspect, which promotes engaging actively and purposefully in vocationally relevant enquiry.

Tasks identified with this icon promote development of skills in written communications. As with reading skills, the writing skills emphasized in CIMC materials have a vocational context. They include filling out forms, keeping work activity records, writing simple memos and letters, generating more complex reports and articles, and written expression of ideas and concepts related to vocational performance or exploration.

This icon identifies activities which develop vocationally-related skills in computation, measurement and estimation, selection and application of appropriate mathematical processes, and collecting, displaying, or interpreting data.

USING THIS PUBLICATION

STUDENT'S SECTION

SCIENCE SKILLS: Skills involving mastery and application of scientific information or theory.

This icon marks activities which are related to the development of skills in either the physical or biological sciences. These skills stress occupationally-related applications of science and technology.

ORAL COMMUN-ICATION SKILLS: Skills involving speaking and listening.

Activities marked with this icon promote development of effective speaking and listening. They include practice in such areas as speaking techniques, word choice, non-verbal messages, use of communication media, and using active listening techniques. Many of these activities promote "learning to learn" skills in verbal enquiry.

INTER-PERSONAL OR RELATING SKILLS: Skills involving working and getting along with others.

Activities which deal directly with skills in relating to others are marked with this icon. This includes areas such as multi-cultural awareness, group processes and dynamics, negotiation, dealing with conflict, cooperation and teamwork, values and attitudes, and leadership and motivation.

USING THIS PUBLICATION

STUDENT'S SECTION

CREATIVE THINKING AND PROBLEM SOLVING SKILLS: Skills involving comprehending, applying, analyzing, and developing complex ideas and situations.

This icon identifies activities which stress development of higher-order thought processes such as problem identification and analysis, lateral thinking, evaluating alternatives, developing solutions, examining assumptions, and evaluating outcomes.

EMPLOYABILITY SKILLS: Skills involving choosing, obtaining, and succeeding in a career.

Activities marked with this icon relate to competencies required to obtain employment and develop a career. These competencies include specific occupational tasks. They also include items such as career analysis and selection, job searching, completing applications and resumes, interviewing, and business etiquette and personal management skills required for job-keeping and maturing in one's work. Examples of the latter category include personal presentation, self-discipline, work accuracy, reliability, discretion, punctuality, stress handling, judgement, confidence, etc.

SOCIAL STUDIES SKILLS: Skills involving investigation and application of social concepts.

This icon marks activities which stress competencies in fields relating to human society and its distribution and relationships. This includes areas such as history, geography, government and politics, economics, psychology, sociology, demographics, current events, cross-cultural studies, consumer issues, environmental issues, and ethical concerns in science and technology.

USING THIS PUBLICATION

Impact Statements

STUDENT'S SECTION

There are five areas of human culture for which each TLA has an impact. These impact statements appear during Day Eight, after the student has gained some familiarity with the technology.

❶ *ENVIRONMENTAL IMPACT:* A statement introducing the student to the impact of the technology on the environment.

❷ *SOCIAL/CULTURAL IMPACT:* A statement concerning the impact of the technology on society and culture.

❸ *ECONOMIC IMPACT:* A statement concerning the impact of the technology on the economy.

❹ *POLITICAL IMPACT:* A statement concerning the impact of the technology on politics, laws, and regulations, and the impact of politics on the development of the technology.

❺ *ERGONOMIC IMPACT:* A statement concerning the ergonomic implications of the technology. Ergonomics is the study of developing products and systems that meet peoples' needs.

USING THIS PUBLICATION

STUDENT'S SECTION

Impact Statements offer the student the opportunity to see beyond the activities in the Technology Learning Lab and glimpse the real-world applications of the technology.

Career Search

Also on Day Eight, the students are given the assignment of investigating several career opportunities related to the technology of the TLA. The investigation is done with *Career Search Abstracts.* A list of up to five careers related to the TLA is given, followed by pages from *Career Search Abstracts* that detail the career qualifications and work environment. The student is required to choose two of the five related careers, read the appropriate abstracts, then write a short essay about why those careers may be appealing.

Posttest Instructions

The students are required to take a Posttest as one of the last day's activities. The instructions for the Posttest are given in this section. The score for the Posttest may be compared to the score for the Pretest to help determine the student's gain during the TLA.

USING THIS PUBLICATION

Skunk Works

STUDENT'S SECTION

Skunk Works, a Day Eight optional activity, include instructions that could be used for solving problems or reinforcing the enrichment of learning.

The term Skunk Works was coined by engineers at 3M Corporation in the mid-1960s. Some engineers wanted to develop a new product, but company management would not give them the time or money to work on the project. So the engineers "borrowed" time and money from approved projects to work on their "Skunk Works." When they finished developing the product, they presented it to management and it has been a 3M product ever since. The product: Velcro fasteners.

HAZARD ALERT MESSAGES

The Daily Activities include hazard alert information specific to the Activity. These messages should be discussed carefully and thoroughly. The Hazard Alert Message system used in the TLA is based on the American National Standards Institute (ANSI) Standard Z535, which provides for five levels of alert.

Students are introduced to the ANSI Hazard Alert Message system as an activity in the Laboratory Safety Design Briefs (TE1107/TE3107). This system was adopted by ANSI as the standard in 1990 and will be the hazard alert system in use when students reach the workplace.

Hazard Alert Messages in the TLA are indicated both by the color red and graphically. There are three types of hazard alert graphics used in the TLA: the hazard alert symbol, injury hazard graphics, and avoidance graphics.

This Hazard Alert Symbol is used with the words DANGER, WARNING, and CAUTION. ANSI defines these words as:

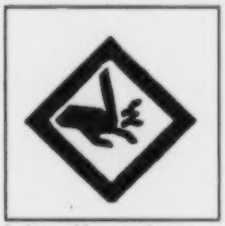
Hazard Alert Symbol

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

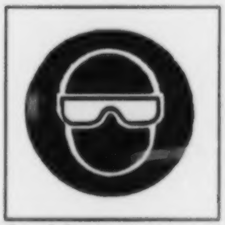
CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

HAZARD ALERT MESSAGES



Injury Hazard Graphic

There are two types of graphics used in conjunction with the hazard alert symbol. This type of graphic depicts a specific injury that may be expected if the hazard described in the alert is not avoided.



Avoidance Graphic

This second type of graphic is called an avoidance graphic. It depicts an action the student should take in order to avoid injury.

There are two other ANSI words used in the TLAs and the students should understand their meanings:

NOTICE indicates an action that could result in damage to property or equipment.

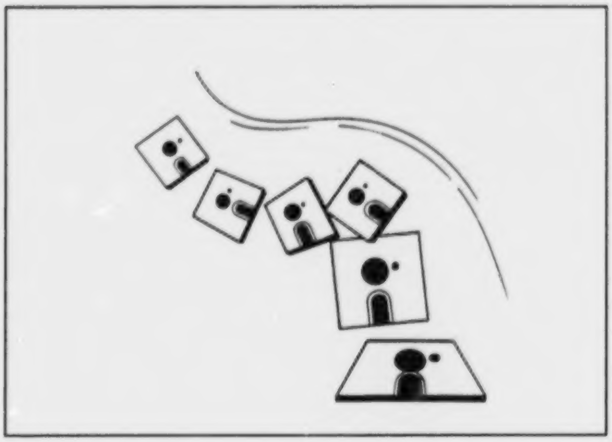
IMPORTANT indicates an instruction that can help the student do a better job.

TECHNOLOGY EDUCATION

INTRODUCTION TO ANIMATION

TE1132/TE3132

INSTRUCTOR'S SECTION



BACKGROUND INFORMATION

Animation is the art of making drawings or objects appear to move. Currently, the most familiar animations are the cartoons you have seen on Saturday morning television. Animation is also popularly used in advertising, television commercials, music videos, and arcade games. Because of the advances in computers that can produce animation, businesses, schools, scientists, technicians, and researchers are using and creating animation also.

The attempt to visually represent movement dates back to prehistoric cave paintings. In these paintings animals were drawn with several legs that were blurry to indicate movement. Flipbooks were popular in the 1500s in Europe. When the pages were flipped very fast, the drawings seemed to move. This idea is regaining popularity and appearing on sets of baseball cards. You flip the corners of the stack of baseball cards to see famous players making plays like home-run hits.

The technological processes for creating animation have developed within the motion picture industry since the late 1800s. Four types of animation production reflect this historical development. Cel-animation, object-animation, drawing-on-film, and computer animation are different ways of creating the illusion of the movement of visual images.

—continued—

INSTRUCTOR'S SECTION

BACKGROUND INFORMATION

INSTRUCTOR'S SECTION

Cel-animation and object-animation evolved with the motion picture beginning in 1895. Cel-animation involves drawing the action of images frame-by-frame and then filming each frame. Object-animation involves manipulating actual objects (for example, clay figures, photographs, or puppets) and filming each change in action or appearance. Object-animation is also known as stop-action animation because filming is stopped as each change is made.

A technique for drawing images onto the film was developed in the 1930s and 1940s. Drawing-on-film eliminated the need for cameras because the visual images were drawn directly onto the film.

The newest and most technological process is to use computer programs to create animation. These computer images can even be transferred to film and videotape.

There are super-computers that make very good animation possible, but these are expensive and are not available to most people. The development of personal computers has made it possible for many people to own computers at work or even at home. The animation programs for these computers do not produce as good a quality as that of Walt Disney Studios or

— continued —

BACKGROUND INFORMATION

INSTRUCTOR'S SECTION

Industrial Light and Magic (a production company formed by a group of animators after working on the movie *Star Wars*). Computers can produce animation that is of equal quality with arcade games.

Animation used to require expensive movie-making equipment. Now, computer programs like *Animator*™ have simplified the task tremendously. Using a computer, the artist does not have to redraw each frame every time it is needed. The memory capacity of computers allows the artist to save and reuse each creation as needed. Being able to create, edit (change), and save (store in computer memory) any visual image you design saves time and money.

All the would-be artist requires now is a computer, an animation program and time to practice the animating functions. Artistic talent helps, but because of the accessibility of computers almost anyone can attempt animation.

Before beginning the actual animation process, most animators will practice a technique called storyboarding. A storyboard is a method of scripting an animation production and showing how it will look before starting.

— continued —

BACKGROUND INFORMATION

Storyboards can help the animator review plans for themselves or with others. Storyboards also provide a way for encountering problems in the plans or design before the animation process is actually underway. Preventing these problems can save time, frustration, and especially money.

When animators create storyboards, they are outlining their plan for production. The animator sketches the scenes (or frames) in the order they will appear, with the dialogue and sound effects written below. This way all of the action can be seen as the animator will create it, one frame at a time.

You can see that storyboards look a lot like comic strips. Each scene or frame shows the action and tells how the image will change. Storyboards help lead animators into the production schedule. Using the storyboard, they create the images on screen and can often save time and effort by seeing when frames can be repeated rather than recreated.

Computer animation saves time for the artist. The computer can generate the art faster and reuse drawings. Instead of the artist drawing each of the hundreds of cels (frames) that would be needed for a few minutes of film or videotape, the tasks can be performed on the computer.

— continued —

INSTRUCTOR'S SECTION

BACKGROUND INFORMATION

Animation uses approximately 24 to 30 frames per second of filmed or videotaped movement.

Because the computer has replaced time consuming hand drawing, animation is finding new roles in assisting technology. Computers can be used to generate animation that simulates space and flight, education, medical research, engineering designs and operations, sports, and the laws and studies of the sciences.

Super-computers are capable of complex mathematical processes. These computers are powerful enough to perform fractal geometry. The increased mathematical capability will make it possible for animation design to be calculated mathematically and be input into the computer as mathematic formulas rather than actual drawings. This capability will greatly reduce the time and labor of artists. Animation of this type will be more precise and accurate, thus improving the quality of computer animation tremendously.

Although current personal computers cannot produce the professional quality animation of movies at this time, it may be possible soon. The capability already exists, but is expensive and reserved for the larger super-computers. With output devices like HDTV (High Definition Television) and computers capable of

— continued —

INSTRUCTOR'S SECTION

BACKGROUND INFORMATION

INSTRUCTOR'S SECTION

fractal geometry being used and produced, the costs will come down. Like today's personal computers, these newer, better models of the future will be available for many people someday.

EXPECTED LEARNER OUTCOMES

INSTRUCTOR'S SECTION

- The student will become a more sophisticated consumer of the goods and services of a technological society.
- The student will develop an understanding and the ability to adapt to those technological forces that influence life in the 21st Century.
- The student will communicate by making clear and relevant points through the development of mental process skills.
- The student will apply design, imagination, and creative abilities.
- The student will learn applications of lifelong learning skills.
- The student will know and appreciate the importance of technology and technological literacy.

— continued —

EXPECTED LEARNER OUTCOMES

INSTRUCTOR'S SECTION

- ➢ The student will explore career opportunities so they can make meaningful occupational choices.
- ➢ The student will apply problem-solving and critical thinking skills.
- ➢ The student will develop keyboarding and computer literacy skills.
- ➢ The student will develop basic skills in the safe and proper use of tools, machines, materials, processes, and technical concepts.
- ➢ The student will recognize and develop individual talents.
- ➢ The student will think logically and sequentially.

SUGGESTED ACTIVITIES

- ✓ Obtain materials to supplement the TLA.

  See Suggested Resources for computer software, books, and videotapes on animation to supplement this module.

- ✓ Review instructional outline for this TLA. Modify time frames to suit class needs and plan activities for each class period.

- ✓ Study the specific objectives to determine those you will cover in your presentation. Decide also which objectives should be taught to which students.

- ✓ Determine the scope and sequence of objectives that you add to the TLA. Design and develop support materials, including evaluation techniques, for additional objectives.

- ✓ Preview the *Animator* videotape and practice using the *Animator* program to prepare a brief demonstration for the students.

— continued —

INSTRUCTOR'S SECTION

PREPARATION

SUGGESTED ACTIVITIES

- ✓ Determine how you will schedule time for students to demonstrate competence in the required procedures.
- ✓ Make arrangements for guest speakers. Supply speakers with specific objectives and other appropriate sections of this TLA.
- ✓ Make arrangements to watch an animated short film; find animation concepts book showing different techniques besides computer animation and other applications for computer animation other than artistic or entertainment.

INSTRUCTOR'S SECTION

SUGGESTED RESOURCES

INSTRUCTOR'S SECTION

AUDIOVISUAL

ANIMATOR, videocassette, Auto Desk, Inc., 2320 Maringship Way, Sausalito, CA, 1989.

COMPUTER SOFTWARE

ANIMATOR: This software allows students to create animated figures, scenes, or programs, then put them in motion for a specific number of frames.

PROTEUS: This software allows students to create interactive product demos. It is available from Tigersoftware, P.O. Box 143376, Coral Gables, FL 33114-3376, and can be ordered by calling 1-800-888-4437.

WORKSTATION BOOKSHELF

Animator: Reference Guide, Auto Desk, Inc., 1989.

INSTRUCTOR'S REFERENCE MATERIALS

Animator: Reference Guide, Auto Desk, Inc., 1989.

Craft, Clyde O. *Computer Graphics*, Kentucky Department of Education, Office of Vocational Education: Frankfort, KY, 1988.

Hoffer, Thomas W. *Animation: A Reference Guide*, Greenwood Press: Westport, CT, 1981.

Roncarelli, Robi. *The Computer Animation Dictionary*, Springer-Verlag: New York, 1989.

— continued —

SUGGESTED RESOURCES

INSTRUCTOR'S SECTION

Weinstock, Neal. *Computer Animation*, Addison-Wesley Publishing Company: Reading, MA, 1986.

Instructional Sequence	Technology Education: Introduction to Animation		
	Assignments	**Equipment, Tools, and Supplies**	**Facilities Requirements/ Modifications**
Day 1	Take Pretest Read and study the Assignment Checklist, Words You Should Know, Expected Learner Outcomes, Objectives, TSA Competitive Events, and Academic and Workplace Skills	Computer score card/sheet for Pretest	
Day 2	Complete Objective 1: Watch the *Animator* videotape to see what capabilities are possible with the *Animator* program. Complete Objective 2: Operate the computer to turn it on and load the *Animator* program. Complete Objective 3: Use the computer and *Animator* program to operate the following function keys: draw, brush size, color selection, box, v grad, undo, flic menu, and reset. Complete Objective 4: Use the computer to exit the *Animator* program and turn off the computer.	Videocassette player and *Animator* videotape Computer with *Animator* loaded on hard drive Keyboard, mouse, and surge protector	

BEST COPY AVAILABLE

Instructional Sequence	Technology Education: Introduction to Animation		
	Assignments	**Equipment, Tools, and Supplies**	**Facilities Requirements/ Modifications**
Day 3	Complete Objective 5: Use the computer and *Animator* program to operate the following function keys: color palette, spray, air speed bar, spray width bar, text, and font. Complete Objective 6: Use the computer and *Animator* program to operate the following function keys: zoom (unzoom), line, and fill functions.	Computer with *Animator* loaded on hard drive. Keyboard, mouse, and surge protector.	
Day 4	Complete Objective 7: Create two or three variations of a storyboard for a still animation. Complete Objective 8: Use the computer, the *Animator* program, and your choice of storyboards to create still animation for your instructor to grade.	T-square or ruler. Paper: 8.5" X 11", 3 sheets. Pencil with eraser. Colored pens, pencils, or crayons. Selected storyboard. Computer with *Animator* loaded on hard drive. Keyboard, mouse, and surge protector.	

BEST COPY AVAILABLE

Instructional Sequence	Technology Education: Introduction to Animation		
	Assignments	**Equipment, Tools, and Supplies**	**Facilities Requirements/ Modifications**
Day 5	Complete Objective 9: Use the computer and *Animator* program to operate the following function keys: cel menu (clip, move, paste cel), pic menu (clear, separate), frames icon/arrows, frames panel (set frame number, play flic, set play speed), trace menu (insert tweens, erase guide), T, and time select panel (preview, render).	Computer with *Animator* loaded on hard drive Keyboard, mouse, and surge protector	
Day 6-7	Complete Objective 10: Use the computer and the *Animator* program to create a 32 frame moving animation for your instructor to grade. Complete Objective 11: Use the computer to save your computer animation to a diskette.	Computer with *Animator* loaded on hard drive Keyboard, mouse, and surge protector Diskette	
Day 8	Complete any incomplete assignments. Read and Study Impact Statements Complete Career Search Activity Take Posttest and spelling test Hand in assignments	Paper: 8.5" X 11", 2 sheets Computer score card/sheet for Posttest and spelling test	

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Equipment, Tools, and Supplies: Summary Worksheet

Equipment, Tools, and Supplies	**Per Student**	**Per Period**	**Total Needed**	**Special Considerations**	**Cost per Student**	**Cost per Period**	**Total Cost**	**Special Considerations**
T-square or ruler	1	24						
Paper (8.5" X 11")	5	(for 24)						
Pencil with eraser	1	24						
Colored pens, pencils, or crayons	1 set	(for 24)						
Computer with mouse & keyboard, and *Animator* loaded on hard drive	1	1						
Diskettes	1	(for 24)						
Videocassette player& *Animator* videotape	1	1						
Computer score card/sheet	1	24						

BEST COPY AVAILABLE

PRETEST

1. Adding in-betweens to animation means:
    - a. creating half pictures within each frame.
    - b. placing a sequence between frames to add smoothness.
    - c. adding blank space.
    - d. joining audio and visual elements.

2. When you "render" your animation, you are:
    - a. playing the motion at normal speed.
    - b. playing the motion at a faster than normal speed.
    - c. tearing the animation frames.
    - d. drawing the animation by hand.

3. "Saving" your animation program means that you are:
    - a. hand copying your designs.
    - b. making a back-up copy of your computer generated image in the computer's memory.
    - c. creating a file and exact copy of your computer generated image for later use.
    - d. telling your teacher not to lose your work.

— continued —

INSTRUCTOR'S SECTION

PART 1

PRETEST

INSTRUCTOR'S SECTION

PART 2

4. Animation is:
   - a. a process where images or objects appear to move.
   - b. the art of drawing comic strips.
   - c. a term coined by Walt Disney.
   - d. a process of filming cartoons.

5. The cursor and the mouse are:
   - a. the same.
   - b. two types of animation.
   - c. your guides for telling the computer what to do.
   - d. the computer's memory and your control to the keyboard.

6. One complete image is:
   - a. a cartoon.
   - b. animation.
   - c. an icon.
   - d. a frame.

7. A list displayed on the computer screen which offers options that you can select by using the cursor is called:
   - a. a spline.
   - b. a menu.
   - c. a palette.
   - d. a preview.

— continued —

PRETEST

8. Creating a storyboard is a method for:

    a. sketching the animation to show how it will look in sequence and with action and dialogue noted.
    b. making images on the computer screen begin to move like real objects.
    c. drawing as many different ideas as possible for making one animated object before making it move on the computer screen.
    d. making sure you can create your animation without sound.

9. The apparent movement of an object closer to or away from the viewer is called:

    a. a preview.
    b. an optical illusion.
    c. a zoom.
    d. animation.

10. Of the following, which is NOT considered a type of animation:

    a. Cel.
    b. Object.
    c. Computer.
    d. Comic strip.

INSTRUCTOR'S SECTION

PART 3

POSTTEST

11. Adding in-betweens to animation means:
    - a. creating half pictures within each frame.
    - b. placing a sequence between frames to add smoothness.
    - c. adding blank space.
    - d. joining audio and visual elements.

12. When you "render" your animation, you are:
    - a. playing the motion at normal speed.
    - b. playing the motion at a faster than normal speed.
    - c. tearing the animation frames.
    - d. drawing the animation by hand.

13. "Saving" your animation program means that you are:
    - a. hand copying your designs.
    - b. making a back-up copy of your computer generated image in the computer's memory.
    - c. creating a file and exact copy of your computer generated image for later use.
    - d. telling your teacher not to lose your work.

— continued —

INSTRUCTOR'S SECTION

PART 1

POSTTEST

14. Animation is:

    a. a process where images or objects appear to move.
    b. the art of drawing comic strips.
    c. a term coined by Walt Disney.
    d. a process of filming cartoons.

15. The cursor and the mouse are:

    a. the same.
    b. two types of animation.
    c. your guides for telling the computer what to do.
    d. the computer's memory and your control to the keyboard.

16. One complete image is:

    a. a cartoon.
    b. animation.
    c. an icon.
    d. a frame.

17. A list displayed on the computer screen which offers options that you can select by using the cursor is called:

    a. a spline.
    b. a menu.
    c. a palette.
    d. a preview.

— continued —

INSTRUCTOR'S SECTION

PART 2

POSTTEST

18. Creating a storyboard is a method for:

    a. sketching the animation to show how it will look in sequence and with action and dialogue noted.
    b. making images on the computer screen begin to move like real objects.
    c. drawing as many different ideas as possible for making one animated object before making it move on the computer screen.
    d. making sure you can create your animation without sound.

19. The apparent movement of an object closer to or away from the viewer is called:

    a. a preview.
    b. an optical illusion.
    c. a zoom.
    d. animation.

20. Of the following, which is NOT considered a type of animation:

    a. Cel.
    b. Object.
    c. Computer.
    d. Comic strip.

INSTRUCTOR'S SECTION

PART 3

POSTTEST

21. cursur
22. cel animation
23. inn-betweens
24. storyboard
25. preview
26. pallit
27. rendar
28. frame
29. spline
30. imaiging

INSTRUCTOR'S SECTION

SPELLING TEST

TEST ANSWERS

1. B
2. A
3. C
4. A
5. C

6. D
7. B
8. A
9. C
10. D

11. B
12. A
13. C
14. A
15. C

16. D
17. B
18. A
19. C
20. D

21. B
22. A
23. B
24. A
25. A

26. B
27. B
28. A
29. A
30. B

INSTRUCTOR'S SECTION

PRETEST ANSWERS

POSTTEST ANSWERS

SPELLING TEST ANSWERS

EVALUATION SUMMARY

10 POINTS EACH:

Pretest ______

Career Search ______

Objective 3: Use the computer and *Animator* program to operate the following function keys:
- draw
- brush size
- color selection
- box
- v grad
- undo
- flic menu
- reset ______

Objective 5: Use the computer and *Animator* program to operate the following function keys:
- color palette
- spray
- air speed bar
- spray width bar
- text
- font ______

Objective 6: Use the computer and *Animator* program to operate the following function keys:
- zoom (unzoom)
- line
- fill ______

— continued —

INSTRUCTOR'S SECTION

1. PROCESS EVALUATION

EVALUATION SUMMARY

Objective 7: Create two or three variations of a storyboard for a still animation. ______

Objective 8: Use the computer, the *Animator* program, and your choice of storyboards to create still animation for your instructor to grade. ______

Objective 9: Use the computer and *Animator* program to create a moving animation picture and to operate the following *Animator* function keys:

- cel menu
- clip
- move
- paste cel
- pic menu
- clear
- separate
- frame icon/arrows
- frames panel
- set frame number
- play flick
- set play speed
- trace menu
- insert tweens
- erase guide
- T
- time select panel
- preview
- render ______

— continued —

INSTRUCTOR'S SECTION

1. PROCESS EVALUATION

EVALUATION SUMMARY

20 POINTS EACH:

Objective 10: Use the computer and the *Animator* program to create a 32 frame moving animation. ____

INSTRUCTOR'S SECTION

1. PROCESS EVALUATION

PROCESS EVALUATION SCORE ____

EVALUATION SUMMARY

The instructor is encouraged to individualize the TLA to address the specific needs of each student, considering age and ability level. In addition to the specific areas on the chart below, the instructor should take into account the student's desire, enthusiasm, etc.

Instructors should evaluate students individually by using the appropriate grading criteria for the TSA Promotional Communications Competitive Event.

♦ TSA Promotional Communications judging criteria is on page 80.

Evaluation based upon observed performance = 100 possible points.

EVALUATION RATING TABLE

Student Name:____________

Criteria	Points Possible	Points Earned
Quality of Storyboard	20 points	______
Technical Quality	10 points	______
Audio Quality	10 points	______
Visual Quality	10 points	______
Overall Quality of Organization	20 points	______
Quality of Message Conveyed to the Audience	30 points	______

Adapted from the "TSA Promotional Communication Official Rating Form," *Curricular Resources Guide 1992-94*. Used with permission.

INSTRUCTOR'S SECTION

2. PRODUCT EVALUATION

PRODUCT EVALUATION SCORE ____

EVALUATION SUMMARY

Posttest Score = __________

EVALUATION WORKSHEET

1. Process Evaluation Score = ____
2. Product Evaluation Score = ____
3. Written Evaluation Score = ____
4. Total Score = ____

Divide Total Score by 3

INSTRUCTOR'S SECTION

3. WRITTEN EVALUATION

WRITTEN EVALUATION SCORE ______

Total score for TLA =

1 + 2 + 3 = 4

Total score/3 = SCORE

TLA SCORE __

BIBLIOGRAPHY

INSTRUCTOR'S SECTION

Animator: Reference Guide, Auto Desk, Inc., 2320 Maringship Way, Sausalito, CA, 1989.

Craft, Clyde O. *Computer Graphics*, Kentucky Department of Education, Office of Vocational Education: Frankfort, KY, 1988.

Hoffer, Thomas W. *Animation: A Reference Guide*, Greenwood Press: Westport, CT, 1981.

Roncarelli, Robi. *The Computer Animation Dictionary*, Springer-Verlag: New York, 1989.

TSA Curricular Resources Guide, Reston, VA: Technology Student Association, 1992.

Weinstock, Neal. *Computer Animation*, Addison-Wesley Publishing Company: Reading, MA, 1986.

TECHNOLOGY EDUCATION

TECHNOLOGY

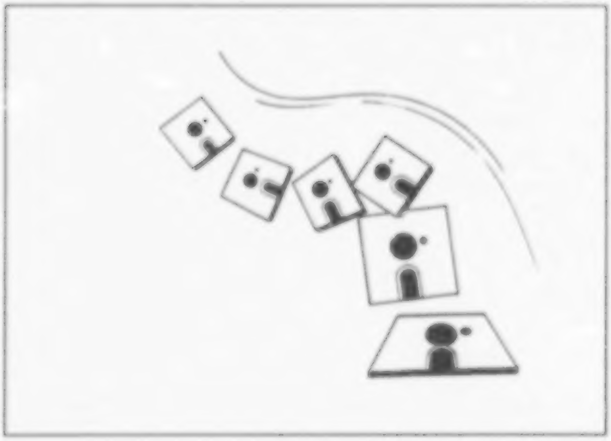
LEARNING

ACTIVITY

TE3132

INTRODUCTION TO ANIMATION

Suggested Time: 8 Days



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Oklahoma Department of Vocational and Technical Education

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Curriculum and Instructional Materials Center

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TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 1 you should complete the following activities:

❶ Complete Pretest

❷ Read Assignments to Turn In (items to complete in eight days)

❸ Read Goal

❹ Read Words You Should Know

❺ Read Expected Learner Outcomes

❻ Read Objectives

❼ Read Related TSA Competitive Event

❽ Read Academic and Workplace Applications

DAY 1 ACTIVITIES

SUMMARY OF ACTIVITIES

Reading Comprehension Skills:
♦ Gain factual information

Functional Reading Skills:
♦ Follow written instructions
♦ Use content area vocabulary

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

You will need a computer scan sheet or card to record your answers to the following Pretest. Be sure to write your name, the title of the TLA, the date, and the class period on the computer scan sheet or card using a #2 pencil. Use rows 1-10 to record the answers to the Pretest. If your answers will be hand-scored, use a blank sheet of notebook paper to record your answers and number your answers 1-10.

Get the Pretest Questions from your instructor.

When you finish the Pretest, return the test form and the computer scan card or notebook paper to your instructor.

DAY 1 ACTIVITIES

PRETEST

INSTRUCTIONS

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

ASSIGNMENTS TO TURN IN

At the end of eight days, you will have given the following items to your instructor for evaluation:

1. **Computer score card/sheet with answers to the following:**
   a) Pretest.
   b) Posttest (including spelling test).

2. **Storyboards**
   a) At least two complete sketches of different versions of your still animation.

3. **Diskette(s) with your animation file(s), and any others you may have received.**

4. **Career Search Activity:**
   a) Two occupations identified
   b) Explanation of why those occupations appealed to you

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

GOAL

The Introduction to Animation TLA will help you learn the importance to business and industry of animation, especially computer animation. You will apply the same general procedures in operating a computer animation program and producing an animation video that many commercial companies and academic institutions use for animated products such as cartoons, commercials, instructional videos, and simulated programs.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

WORDS YOU SHOULD KNOW

Animation — A process where images or objects are manipulated in a specific sequence to give the appearance of movement.

Cel Animation — Animation produced by recording sequential **cels**, one for each **frame**. Also known as frame-by-frame animation.

Command — A code or set of instructions that can be keyboarded (typed) into a computer or selected from a menu list or icon by the **cursor**. This code is entered into the computer's memory to tell it what operations you want it to perform.

Computer-Generated Imagery (CGI) — Images created entirely within a computer.

Cursor — A moveable symbol, normally a bar or cross, that moves across the computer screen when a **mouse** is used to move it.

Frame — One complete image. Animation usually requires 24 frames per second on film, and 30 frames per second on videotape.

Icon — A picture or visual symbol.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

WORDS YOU SHOULD KNOW

Imaging — A representation of an object in visual form.

In-Betweens — The **frame**(s) that lie in sequence between two key frames. As a process, **in-betweening** adds smoothness and lifelike animated movement from a drawn image or manipulated object.

Menu — A list displayed on a computer screen which offers specific options and **commands** that can be selected by the **cursor** for operating the computer or the program it is running.

Mouse — A small, hand-held device that is moved over a surface to make a **cursor** on the computer screen move also. The mouse has buttons that you press to input information (signals) into the computer that tells it what options you choose for it to accomplish.

Palette — A selection of colors.

Preview — A function of **animation** programs that shows the artist the full visual effect of the movement of each **frame**, using selected ink and motion settings. But the preview usually is not as fast as the final playback.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

WORDS YOU SHOULD KNOW

Pulldown Menu — Menus that appear in a bar at the top of a screen and contain additional hidden lists which appear to overlap the material on the screen when "pulled down" by the cursor.

Render — A function of animation programs that shows the artist the full visual effect of the movement of each **frame**, using selected ink and motion settings. Render usually plays at the same speed as the final playback.

Spline — A mathematical model used to represent curves, often polygons (many sided objects). Splines are important for giving very smooth curves to images.

Storyboard — A method of sketching the images for an **animation** and showing how it will look in sequence, and with action and dialogue noted.

Zoom — The apparent movement of an object closer to, or away from the viewer.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

EXPECTED LEARNER OUTCOMES

- You will become a more sophisticated consumer of the goods and services of a technological society.
- You will develop an understanding and the ability to adapt to those technological forces that influence life in the 21st Century.
- You will communicate by making clear and relevant points through the development of mental process skills.
- You will apply design, imagination, and creative abilities.
- You will learn applications of lifelong learning skills.
- You will know and appreciate the importance of technology and technological literacy.
- You will explore career opportunities so they can make meaningful occupational choices.
- You will apply problem-solving and critical thinking skills.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

EXPECTED LEARNER OUTCOMES

- You will develop keyboarding and computer literacy skills.
- You will develop basic skills in the safe and proper use of tools, machines, materials, processes, and technical concepts.
- You will recognize and develop individual talents.
- You will think logically and sequentially.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

OBJECTIVES

At the completion of this Technology Learning Activity the student should be able to:

1. Watch the *Animator* videotape to see what capabilities are possible with the *Animator* program.
2. Operate the computer to turn it on and load the *Animator* program.
3. Use the computer and *Animator* program to operate the following function keys:
    - ♦ draw
    - ♦ brush size
    - ♦ color selection
    - ♦ box
    - ♦ v grad
    - ♦ undo
    - ♦ flic menu
    - ♦ reset
4. Use the computer to exit the *Animator* program and turn off the computer.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

OBJECTIVES

5. Use the computer and *Animator* program to operate the following function keys:

   - color palette
   - spray
   - air speed bar
   - spray width bar
   - text
   - font

6. Use the computer and *Animator* program to operate the following function keys:

   - zoom (unzoom)
   - line
   - fill

7. Create two or three variations of a storyboard for a still animation.

8. Use the computer, the *Animator* program, and your choice of storyboards to create still animation for your instructor to grade.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

OBJECTIVES

9. Use the computer and *Animator* program to create a moving animation picture and to operate the following function keys:

- cel menu
    - clip
    - move
    - paste cel
- pic menu
    - clear
    - separate
- frame icon/arrows
- frames panel
    - set frame number
    - play flic
    - set play speed
- trace menu
    - insert tweens
    - erase guide
- T
- time select panel
    - preview
    - render

10. Use the computer and the *Animator* program to create a 32 frame moving animation for your instructor to grade.

11. Use the computer to save your computer animation to a diskette.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

Related TSA Competitive Event

The following TSA Competitive Event applies to your study of Animation:

- Promotional Communication

See *TSA Competitive Events Guidelines* for specific details on the competitions.

The symbols in the right column are used to identify Academic and Workplace Applications that are reinforced by this TLA.

Language Arts Concepts Applied:
- Gain factual information
- Read interpret and apply written instructions
- Interpret graphics and symbols
- Identify incorrectly spelled words

Writing Skills Applied:
- Compose essays
- Construct graphics and symbols
- Use computer graphics

— continued —

ACADEMIC AND WORKPLACE APPLICATIONS

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 1 ACTIVITIES

ACADEMIC AND WORKPLACE APPLICATIONS

Creative Thinking and Problem- Solving Skills Applied:

- Analyze and synthesize information
- Identify and develop alternatives
- Select an alternative
- Apply intuitive thinking techniques
- Create a finished product

Employability Skills Applied:

- Analyze personal occupation preferences
- Investigate requirements for a career field or occupation
- Master specific job task and procedure

If you finish Day 1 Activities with time left over, you may begin Day 2 Activities.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 2 you should complete the following activities:

1. Read Information Sheet
2. Complete Objective 1
3. Complete Objective 2
4. Complete Objective 3
5. Complete Objective 4

DAY 2 ACTIVITIES

SUMMARY OF ACTIVITIES

Reading Comprehension Skills:

- Gain factual information
- React to written material

Functional Reading Skills:

- Follow written instructions
- Interpret graphics and symbols

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

INFORMATION SHEET

Animation is the art of making drawings or objects appear to move. Currently, the most familiar animations are the cartoons you have seen on Saturday morning television. Animation is also popular in advertising, television commercials, music videos, and arcade games. Because of the advances in computers that can produce animation, businesses, schools, scientists, technicians, and researchers are using and creating animation also.

The attempt to visually represent movement dates back to prehistoric cave paintings. In these paintings animals were drawn with blurry legs to indicate movement. Flipbooks were popular in the 1500s in Europe. When pages were flipped very fast, the drawings seemed to move. The idea is regaining popularity and appearing on sets of baseball cards. You flip the corners of the stack of baseball cards to see famous players making plays like homerun hits.

The technological processes for creating animation have developed within the motion picture industry since the late 1800s. Four types of animation production reflect this historical development. Cel-animation, object-animation, drawing-on-film, and computer animation are different

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

ways of creating the illusion of the movement of visual images.

Cel-animation and object-animation evolved with the motion picture beginning in 1895. Cel-animation involves drawing the action of images frame-by-frame and then filming each frame. Object-animation involves manipulating actual objects (for example, clay figures, photographs, or puppets) and filming each change in action or appearance. Object-animation is also known as stop-action animation because filming is stopped as each change is made.

A technique for drawing images onto the film was developed in the 1930s and 1940s. Drawing-on-film eliminated the need for cameras because the visual images were drawn directly onto the film.

The newest and most technologically advanced process is to use computer programs to create animation. These computer images can even be transferred to film and videotape.

— continued —

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

The development of personal computers has made it possible for many people to own computers at work or even at home. There are super-computers that make very good animation possible, but these are expensive and are not available to most people. The animation programs for personal computers do not produce as good a quality as that of Walt Disney Studios or Industrial Light and Magic (a production company formed by a group of animators after working on the movie *Star Wars*). These computers can produce animation that is as good as arcade games.

DAY 2 ACTIVITIES

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

OBJECTIVE 1

Watch the *Animator* videotape to see what capabilities are possible with the *Animator* program.

TOOLS AND MATERIALS

- *Animator* video tape
- VCR

PROCEDURE

FOLLOW THESE STEPS:

STEP 1: Get the *Animator* videotape from your instructor.

Seek your instructor's help in using the videocassette player to use the tape.

STEP 2: Watch the videotape.

STEP 3: When the *Animator* videotape ends, return it to your instructor.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

OBJECTIVE 2

Operate the computer to turn it on and load the *Animator* program.

TOOLS AND MATERIALS

➢ *Animator* program

PROCEDURE

FOLLOW THESE STEPS:

STEP 1: Review the flow chart for the different menus on page 135 of this TLA. These are pictures of what the screens look like that you will see when using the *Animator* program.

STEP 2: Sit down at the computer.

WARNING

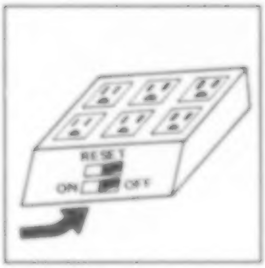
ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

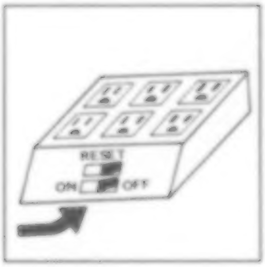
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

STEP 3: Turn ON the surge protector.



STEP 4: Press the RESET button on the surge protector.



IMPORTANT

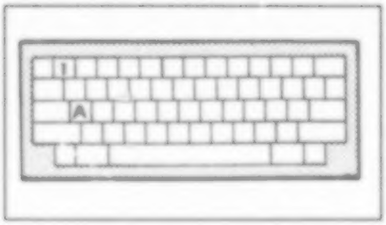
Words and other items that appear in quotation marks refer to items as you will see them on the computer screen. Words that you should type onto the screen using the computer keyboard appear in large size letters. When typing these commands (words), you should type them exactly as they appear.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

STEP 5: At the "C:\" prompt, type **A1** and press the **ENTER** key. The *Animator* program should load at this time.

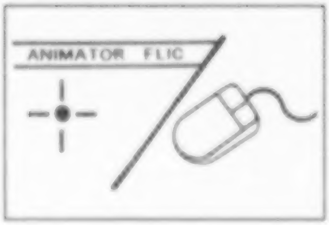


If the Home panel menu picture shows on the screen at this time you may continue with Steps 6 through 9. If this screen does not appear, repeat Steps 4 and 5. If this screen does not appear the second time, seek your instructor's help.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

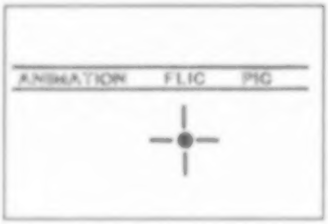
FOLLOW THESE STEPS:



IMPORTANT

The cursor is the dot surrounded by four lines that appears on the screen. The cursor moves on the computer screen when you move the mouse across the table top. To move the cursor, move the mouse and watch the screen. When you move the cursor to the place you want it, stop moving the mouse. You can tell the computer what commands you want it to follow by moving this cursor to the box you want and clicking the correct mouse button.

STEP 6: Using the mouse, move cursor to the menu bar at the top of the screen and point it onto "FLIC".

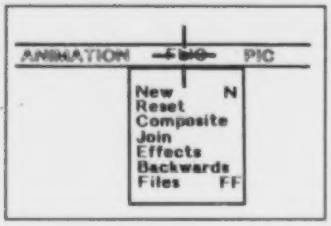


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

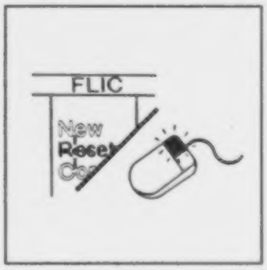
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

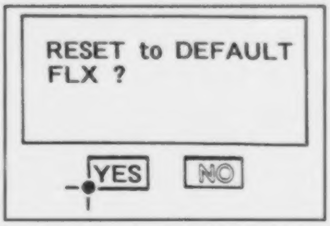
With cursor on "FLIC", another menu automatically pops down.



STEP 7: Move cursor down this new menu to "RESET" and click the left mouse button.



STEP 8: When the "RESET to DEFAULT FLX?" box appears, move cursor onto "YES" and click the left mouse button.


RESET to DEFAULT FLX ?

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

Having completed Objectives 1 and 2, you should now have a blank drawing screen with the Home panel screen showing. (See the flow chart on page 135 for this panel.) If this screen is showing, continue with Objective 3. You are now ready to begin using Animator function keys. If this screen is not showing, repeat steps 6 through 8. If this screen does not show the second time, seek your instructor's help.

Continue Day 2 Activities by completing Objective 3.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

OBJECTIVE 3

Use the computer and *Animator* program to operate the following function keys:

- draw
- brush size
- color selection
- box
- v grad
- undo
- flic menu
- reset

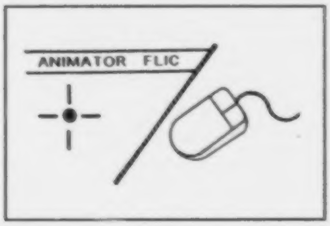
PROCEDURE

FOLLOW THESE STEPS:

STEP 1: Begin at the Home panel screen.

IMPORTANT

Remember to move cursor you must move the mouse until the cursor (dot surrounded by four lines on screen) points to the item you want it to.

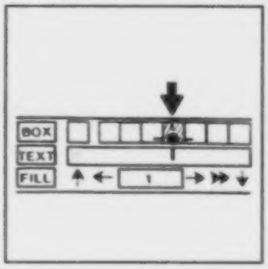


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

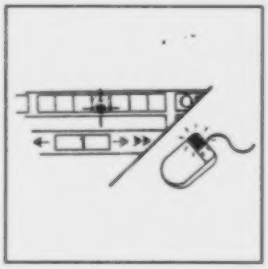
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

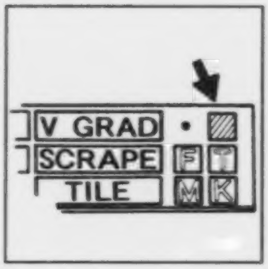
STEP 2: Move cursor to the Home panel at bottom of screen and onto the "orange" box on the color row.



STEP 3: With cursor on the "orange" color square, click the left mouse button.



Notice that the color square in the upper right-hand corner of the Home panel turns this orange color also.



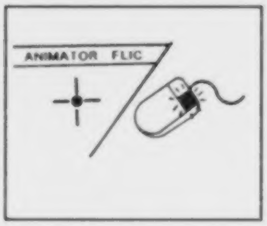
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

STEP 4: Move cursor into the drawing area and click the right mouse button.

Anytime you click the right mouse button while cursor is on the drawing area of the screen you will return to the original Home panel screen.



STEP 5: With cursor on the drawing area, click and hold down the left mouse button to write your first name on the screen.

You will have a continuous line as long as you hold down the left mouse button. If you release the mouse button, your line will stop wherever you have released the left mouse button. You will be unable to draw a line unless you click the left mouse button again.

STEP 6: To write your name, hold the left mouse button down and move the mouse across the table as if you were using a pen. Watch the computer screen to see the writing appear.

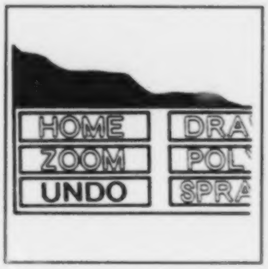
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

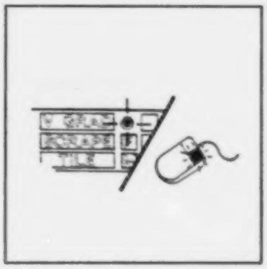
NOTICE

If you make a mistake or your name does not look like you want it to, you can erase (undo) your last action by moving the cursor to "UNDO" in the Home panel and clicking the left mouse button. THIS WILL ONLY UNDO YOUR LAST SEQUENCE.



STEP 7: After writing your first name, release the left mouse button.

STEP 8: Move cursor onto the Brush icon, "•" (period or dot) next to the color selection palette.



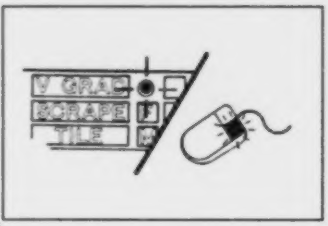
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

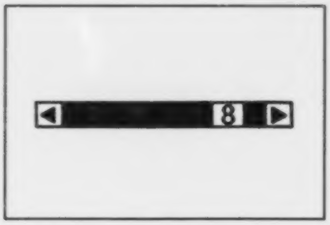
FOLLOW THESE STEPS:

STEP 9: With cursor on "•", click the right mouse button.

The Brush Size Control box appears on the bottom half of the screen.

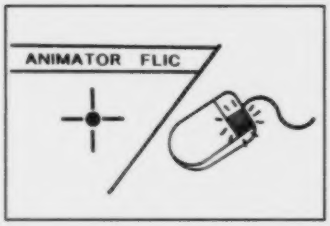


STEP 10: Set Brush Size to 8 by moving cursor to one of the arrows (<>) on either side of the bar and holding down the left mouse button until the number "8" shows in the bar between the arrows.



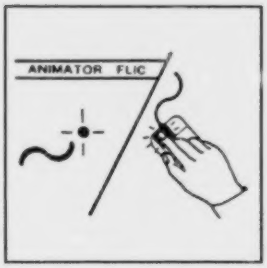
The arrows on either side of the bar (<>) indicate which will decrease (<) the number that appears and which will increase (>) it.

STEP 11: Move cursor into the drawing area and click on the right mouse button to return to the Home panel screen.



FOLLOW THESE STEPS:

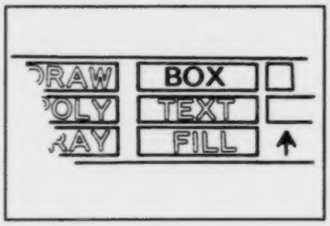
STEP 12: Click and hold down the left mouse button, and write your last name.



Notice the size of the line now, compared to that of your first name.

STEP 13: After writing your last name, release the left mouse button.

STEP 14: Move cursor to the Home panel at the bottom of the screen and point it onto "BOX".

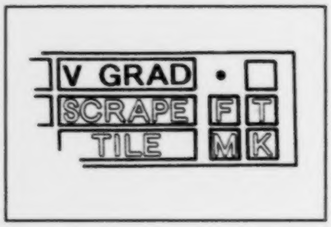


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

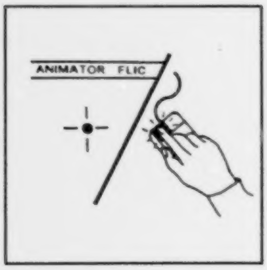
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

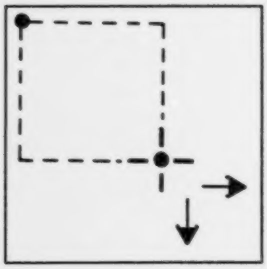
STEP 15:	With cursor on "BOX", click on the left mouse button.
STEP 16:	Move cursor onto the "V GRAD" box.
STEP 17:	With cursor on "V GRAD", click the left mouse button.



STEP 18:	Move cursor to the upper left-hand corner of the drawing area.
STEP 19:	Click and hold down the left mouse button.



STEP 20:	Drag the cursor across the screen to make a box with the coordinates 20 - 50 (points on the screen).

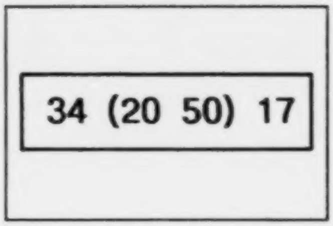


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

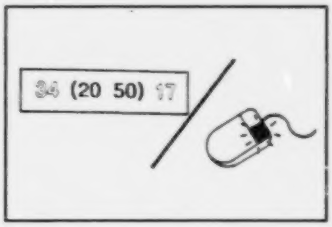
FOLLOW THESE STEPS:

Watch the menu box at the top of the screen as you begin to draw. Move across the screen to the left for length; move down the screen for width. The numbers will change as you move your cursor to create the box. These numbers tell you what the coordinates of your box are.



STEP 21: Move your mouse across the table to make your box appear on the screen as you did when writing your name.

STEP 22: When the coordinates in the menu at the top of the screen read "20 - 50", you have finished drawing your box. Release the left mouse button and click the right mouse button to set your box in place.

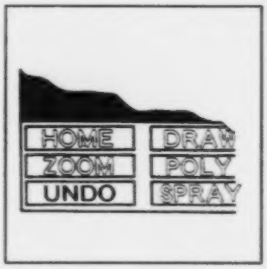


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

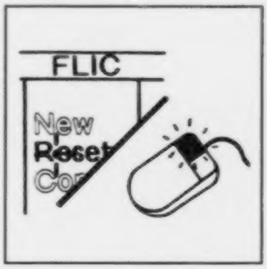
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

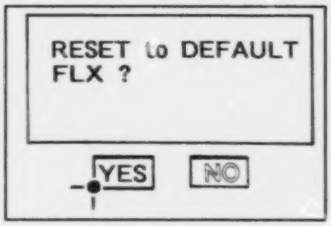
IMPORTANT
Remember, if you make a mistake, you can undo it by moving the cursor to "UNDO" on the home panel and clicking the left mouse button. THIS WILL ONLY UNDO YOUR LAST SEQUENCE.



STEP 23: When you have drawn the box with the correct coordinates, move cursor to "FLIC" menu and "RESET" pulldown and click the left mouse button.



STEP 24: When the "RESET to DEFAULT FLX?" appears, move cursor onto "YES" and click the left mouse button.


RESET to DEFAULT FLX ?

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

You should have time to practice the techniques that you have learned today. When you feel that you have mastered these Animator function keys, continue with Objective 4.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

OBJECTIVE 4

Use the computer to exit the *Animator* program and turn off the computer.

PROCEDURE

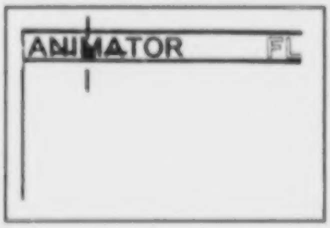
FOLLOW THESE STEPS:

IMPORTANT

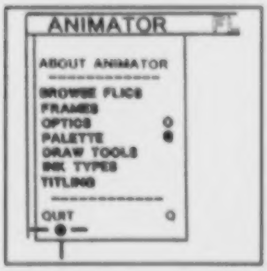
Steps 1 through 4 will allow you to EXIT (take you out of) the *Animator* program and return you to the C: prompt, so that you can then turn off the computer.

STEP 1: Move cursor to menu at top of Home panel screen and onto "ANIMATOR".

With cursor on "ANIMATOR", another menu automatically pops down.



STEP 2: Move cursor down this new menu to "QUIT" and click the left mouse button.

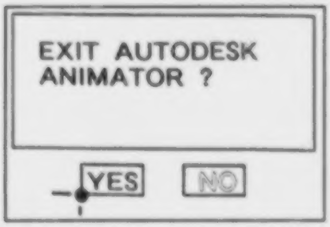


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

STEP 3: When the "EXIT AUTODESK ANIMATOR?" appears, move cursor onto the "YES" box and click the left mouse button.


EXIT AUTODESK ANIMATOR ?

The "C:\" prompt will appear. You are at the first screen that you saw when turning the computer on in Objective 2.

IMPORTANT

If you require "diskparking" before turning off the computer, seek your instructor's help at this time.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

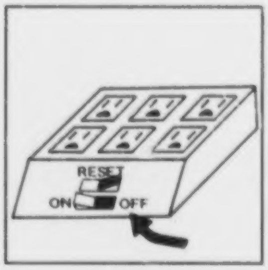
DAY 2 ACTIVITIES

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 4: When the "C:\" prompt appears on the screen, turn off the surge protector.



STEP 5: When you complete Objectives 1 through 4, return all materials to their proper storage area and clean your work area.

If you finish Day 2 Activities with time left over, you may begin Day 3 Activities.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 3 you should complete the following activities:

1. Read Information Sheet
2. Complete Objective 5
3. Complete Objective 6

DAY 3 ACTIVITIES

SUMMARY OF ACTIVITIES

Reading Comprehension Skills:
- Gain factual information
- React to written material

Functional Reading Skills:
- Follow written instructions
- Interpret graphics and symbols

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

INFORMATION SHEET

Animation used to require expensive movie making equipment. Now, computer programs like *Animator* have simplified the task tremendously. Using a computer, the artist does not have to redraw each frame every time it is needed. The memory capacity of computers allows the artist to save and reuse each creation as needed. Being able to create, edit (change), and save (store in computer memory) any visual image you design saves time and money.

All the would-be artist requires now is a computer, an animation program and time to practice the animating functions. Artistic talent helps, but because of the accessibility of computers almost anyone can make animation.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

OBJECTIVE 5

Use the computer and *Animator* program to operate the following function keys:

- color palette
- spray
- air speed bar
- spray width bar
- text
- font

TOOLS AND MATERIALS

➢ *Animator* program

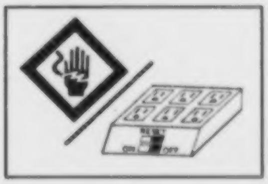
PROCEDURE

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

⚠



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

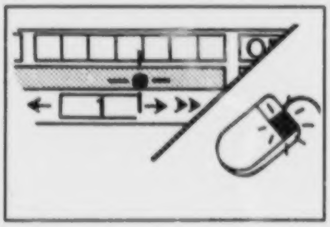
DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 1: Turn on the computer and load the *Animator* program.

Remember that you learned how to accomplish these tasks during Objective 2 for Day 2. If you need to, re-read the steps for Day 2, Objective 2 again.

STEP 2: At the Home panel screen, move the cursor to the Color Spectrum Palette (the box with the rainbow of colors below the individual color squares), and click the right mouse button.



The larger Color Palette box that now appears shows all 256 colors that are available to you.

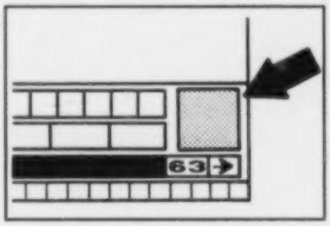
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

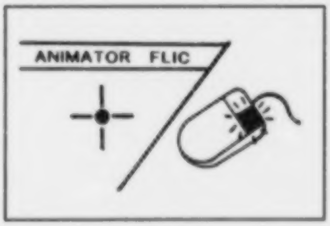
FOLLOW THESE STEPS:

STEP 3: Move the cursor to the dark red box and click the left mouse button.

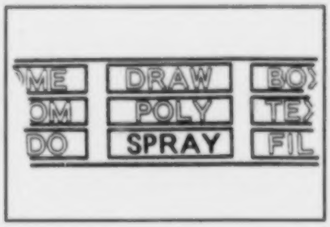
Notice that the box in the upper right-hand corner also changes to this dark red color.



STEP 4: Move the cursor to the drawing area and click the right mouse button to return to the Home panel screen.



STEP 5: Move cursor to "SPRAY" and click the left mouse button.

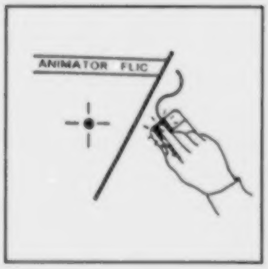


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 6: Move cursor to the drawing area and briefly click the left mouse button.



Notice the spray of color dots appearing on the screen. The spray will be thicker the longer you hold the left mouse button down.

STEP 7: Move the cursor to the orange colored box on the Color Palette and click the left mouse button.

STEP 8: Move cursor to the drawing area and click the left mouse button.

You now have two sprays of different colors.

NOTICE

Remember that if you make a mistake, you can UNDO your last action by moving the cursor to "UNDO" and clicking the left mouse button. THIS WILL ONLY UNDO YOUR LAST SEQUENCE.

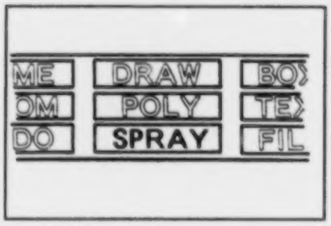
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

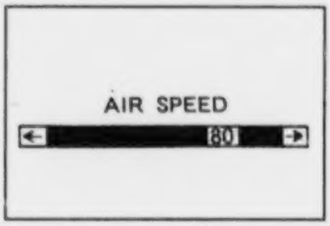
FOLLOW THESE STEPS:

STEP 9: Move cursor to "SPRAY" and click the right mouse button.

The Drawing Tools Panel appears for Steps 10 and 11.

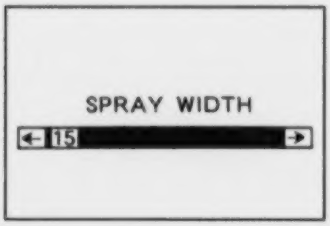


STEP 10: Set the "AIR SPEED" to 80 by moving the cursor to the > (increase) arrow and holding down the left mouse button until the number "80" shows in the bar between the arrows.


AIR SPEED

80

STEP 11: Set the "SPRAY WIDTH" to 15 by moving the cursor to the > (increase) arrow and holding down the left mouse button until "15" shows in the bar between the arrows.


SPRAY WIDTH

15

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

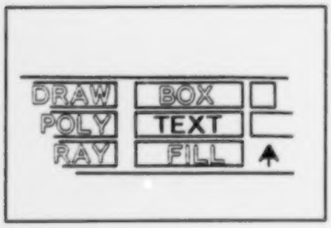
STEP 12: Move the cursor to the drawing area and click the right mouse button to return to the Home panel screen.

STEP 13: With cursor on the drawing area, click the left mouse button.

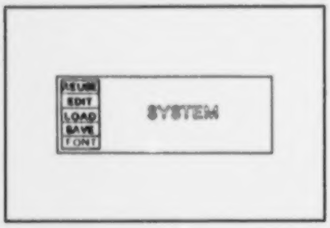
Notice the size and speed of the spray area now.

STEP 14: Move the cursor to "TEXT" and click the right mouse button.

The Drawing Tools Panel appears.



STEP 15: Move cursor to "FONT" and click the left mouse button.



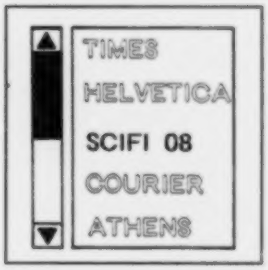
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

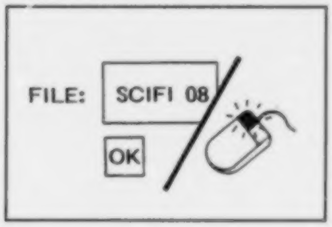
STEP 16: Move cursor to the bar on the left and onto "SCIFI 08", and click the left mouse button.

You may have to move the cursor onto one of the (<>) arrows and hold down the left mouse button until the "SCIFI 08" option appears.



STEP 17: Check the "FILE:" box to see that it shows "SCIFI 08".

STEP 18: Move cursor to "OK" below the "FILE:" box and click the left mouse button.



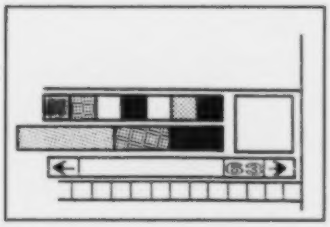
STEP 19: Move the cursor to the drawing area and click the right mouse button to return to the Home panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

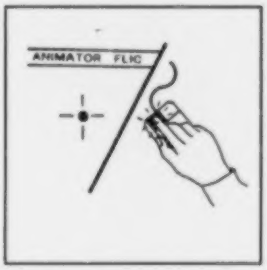
DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 20: Move cursor to a color of your choice on the Color Palette and click the left mouse button.

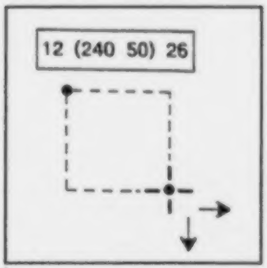


STEP 21: Move cursor to the upper left-hand corner of the drawing screen and click and hold the left mouse button.



Notice that the box coordinates menu appears at the top of the screen.

STEP 22: Holding the left mouse button down, draw a box with the coordinates 240 - 50.

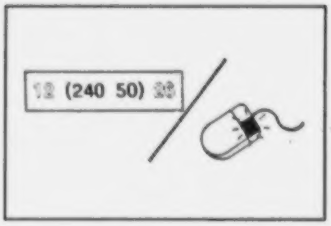


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

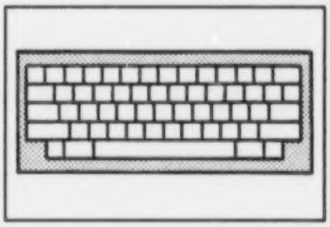
FOLLOW THESE STEPS:

STEP 23: **Release the left mouse button and click the right mouse button to set the box.**



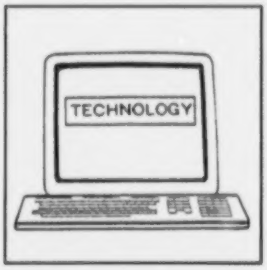
STEP 24: **Now go to the keyboard and type TECHNOLOGY.**

Watch the screen and notice where the word appears.



STEP 25: **Move cursor to the drawing area and click the right mouse button.**

"TECHNOLOGY" now appears in your box and you can use the text in your design.



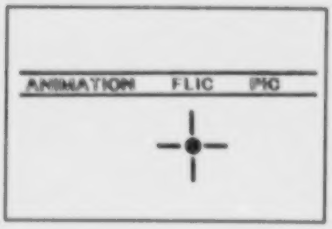
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

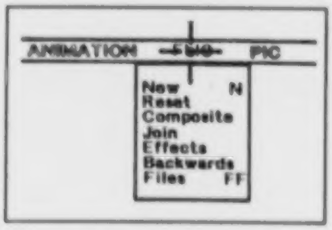
FOLLOW THESE STEPS:

Steps 26 through 28 will allow you to Reset the ***Animator*** *program. These steps will erase your current drawing screen and allow you to begin again with any function you want.*

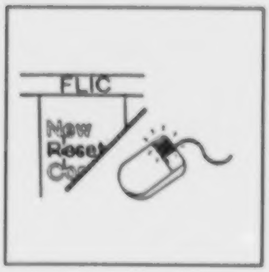
STEP 26: Move cursor to the menu at the top of the Home panel screen and onto "FLIC".



With cursor on "FLIC" another menu automatically pulls down.



STEP 27: Move cursor down this new menu to "RESET" and click the left mouse button.

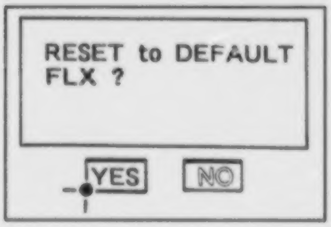


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 28: When the "RESET to DEFAULT FLX?" appears, move cursor onto the "YES" box and click the left mouse button.



RESET to DEFAULT FLX ?

You now have a blank drawing screen and can begin with any new function.

Continue Day 3 Activities by completing Objective 6.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

OBJECTIVE 6

Use the computer and *Animator* program to operate the following function keys:

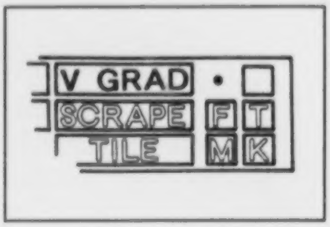
- zoom (unzoom)
- line
- fill

PROCEDURE

FOLLOW THESE STEPS:

STEP 1: At the Home panel screen, move cursor to "BOX" and click the left mouse button.

STEP 2: Move cursor to "V GRAD" and click the left mouse button.



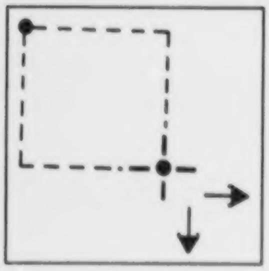
STEP 3: Move cursor to the drawing area; click and hold the left mouse button to draw a box.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

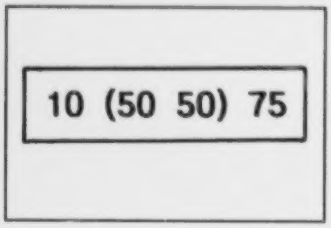
DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 4: Holding the left mouse button down, draw a box with the coordinates 50 - 50 in the center of the screen.

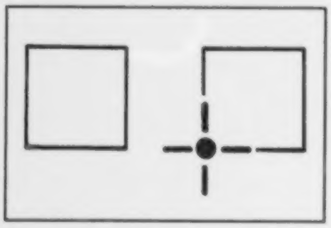


Remember to watch the coordinates menu box at the top of the screen. It should read 50 - 50 before you release the left mouse button and set the box.



10 (50 50) 75

STEP 5: Draw another box with the coordinates 50 - 50 to the right of the first box, and click the left mouse button to set the box. DO NOT OVERLAP THE BOXES.



Remember to watch the coordinates menu box at the top of the screen. It should read 50 - 50 before you release the left mouse button and set the box.

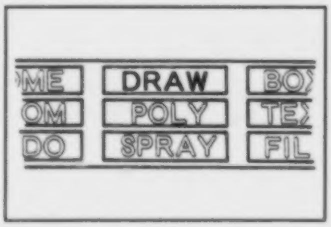
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 6: Move cursor to "DRAW" and click the left mouse button again.

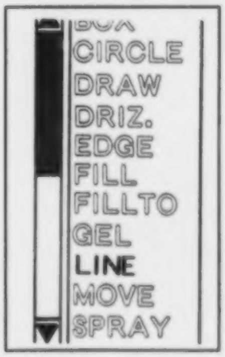
The DRAWING TOOLS menu will appear.



Steps 7 through 11 will allow you to connect the boxes with lines.

STEP 7: Move cursor to the bar on the left and onto "LINE", and click the left mouse button.

You may have to move the cursor onto one of the (<>) arrows and hold down the left mouse button until the "LINE" option appears.



STEP 8: Move cursor to the drawing area and click the right mouse button to return to the Home panel screen.

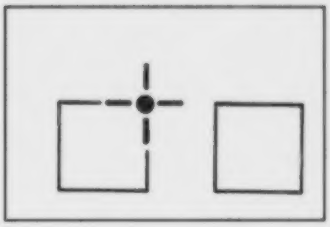
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

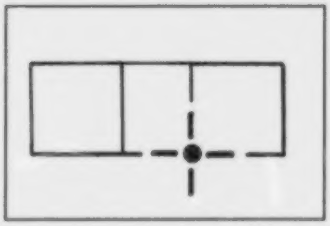
FOLLOW THESE STEPS:

STEP 9: Move cursor to the corner of one box and click the left mouse button.

By clicking the left mouse button once, you have turned on the LINE function. You can now freely move your cursor anywhere on the screen and the Line will move also. To lock the Line in place, you must click the left mouse button again.

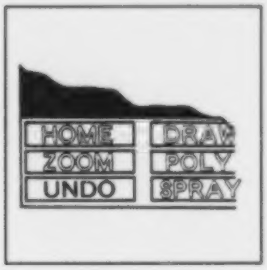


STEP 10: With the LINE function activated (one click on the left mouse button), connect the corners of your two boxes. YOU MAY CHANGE COLORS IF YOU LIKE.



NOTICE

If you make a mistake, you can erase (undo) your last action by moving the cursor to "UNDO" in the Home panel and clicking the left mouse button. THIS WILL ONLY UNDO YOUR LAST SEQUENCE.



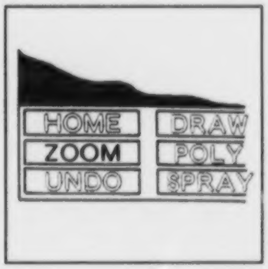
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

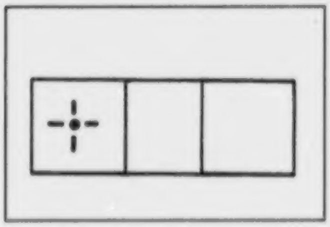
FOLLOW THESE STEPS:

STEP 11: When you have connected the corners of the boxes, click the left mouse button again to turn off the LINE function.

STEP 12: Move cursor to "ZOOM" and click the left mouse button.



STEP 13: Move cursor to any position inside your box in the drawing area and click the left mouse button.



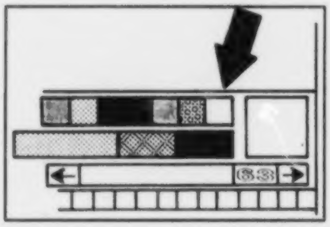
Notice that this Zoom action selects that area of your figure and enlarges it.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

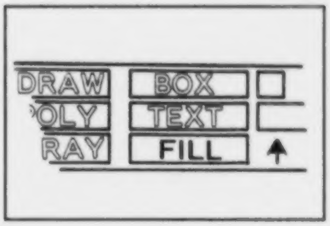
FOLLOW THESE STEPS:

STEP 14: Move cursor to "OPAQUE" on the Home Panel and click the left mouse button.

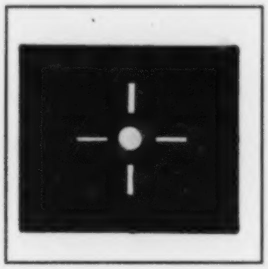


STEP 15: Move cursor to white on the Color Panel and click the left mouse button.

STEP 16: Move cursor to "FILL" and click the left mouse button.



STEP 17: Move cursor to some area of your enlarged figure in the drawing area of the screen and click the left mouse button to fill.



Make sure that the area you fill is closed. Notice that the enlarged area you selected turned white.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 18: Move cursor to "ZOOM" and click the left mouse button.

By clicking "ZOOM" a second time you turn off this function and "unzoom" the area. Notice the colors now present in your figure.

STEP 19: Reset the *Animator* program: move cursor to the "FLIC" menu and the "RESET" pulldown, and click the left mouse button.

STEP 20: When the "RESET to DEFAULT FLX?" appears, move cursor onto "YES" and click the left mouse button.

You now have a new blank drawing screen to start new functions again. You should have time to practice what you have learned today and yesterday. Experiment with the function keys to make an animated drawing. Also experiment with different colors, "FILL", "GLASS", "V GRAD", AND "SOFTEN" on the Home panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

For tomorrow's activity you will create an animation which your instructor will grade, so you need to be familiar with the functions that Animator makes it possible for you to do.

When you feel that you have mastered these function keys, continue with Step 21.

WARNING

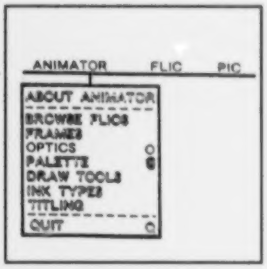
ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 3 ACTIVITIES

FOLLOW THESE STEPS:

STEP 21: EXIT the *Animator* program and turn off the computer.



Remember that you learned how to accomplish these tasks during Objective 4 for Day 2. If you need to, re-read the steps for Objective 4, Day 2.

STEP 22: When you finish clean the work area and return tools and materials to their proper storage areas.

If you finish Day 3 Activities with time left over, you may begin Day 4 Activities.

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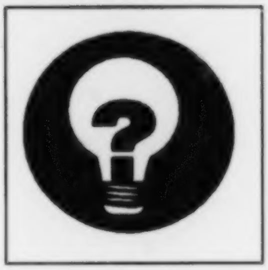
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 4 you should complete the following activities:

1. Read Information Sheet
2. Complete Objective 7
3. Complete Objective 8

DAY 4 ACTIVITIES

SUMMARY OF ACTIVITIES



- ♦ Analyze and synthesize information
- ♦ Identify and develop alternatives
- ♦ Select an alternative
- ♦ Create a finished product

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

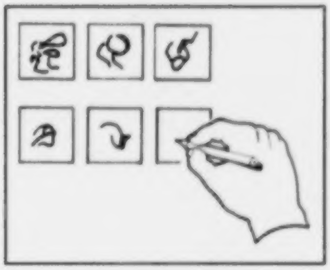
DAY 4 ACTIVITIES

INFORMATION SHEET

Before beginning the actual animation process, most animators will practice a technique called storyboarding. A storyboard is a method of scripting an animation production and showing how it will look before starting.

Storyboards can help the animator review plans for themselves or with others. Storyboards also provide a way for encountering problems in the plans or design before the animation process is actually underway. Preventing these problems can save time, frustration, and especially money.

When animators create storyboards, they are outlining their plan for production. The animator sketches the scenes, or frames, in the order they will appear, with the dialogue and sound effects written below. This way all of the action can be seen as the animator will create it, one frame at a time.



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TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

You can see that storyboards look a lot like comic strips. Each scene or frame shows the action and tells how the image will change. Storyboards help lead animators into the production schedule. Using the storyboard, they create the images on screen and can often save time and effort by seeing when frames can be repeated rather than recreated.

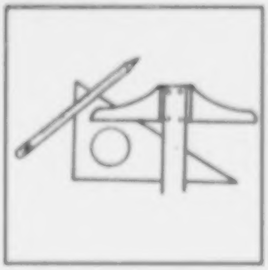
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

OBJECTIVE 7

Create two or three variations of a storyboard for a still animation.

TOOLS AND MATERIALS



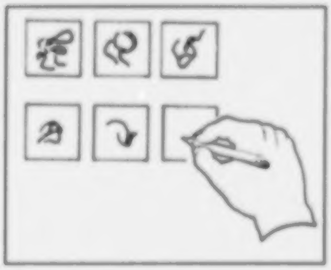
- Three sheets of paper (8½ X 11 inches)
- T-square or ruler
- Pencil with eraser
- Colored pens, pencils, or crayons

PROCEDURE

FOLLOW THESE STEPS:

For each storyboard, be sure to include the colors you will use and indicate all action and dialogue.

STEP 1: Draw your first version of your idea for still animation.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

FOLLOW THESE STEPS:

STEP 2: Draw a second version of your still animation idea. You may use the same elements from your first storyboard, but arrange them in a different order, change motion, and/or dialogue. Or your second storyboard may be completely different from your first.

IMPORTANT

You should continue with Step 3, creating a third storyboard, ONLY if you have sufficient time. Remember that you must finish Objective 8, your still animation, which will be graded.

STEP 3: Draw a third version of your still animation idea. You may use the same elements from your second storyboard, but arrange them in a different order, change motion, and/or dialogue. Or your third storyboard may be completely different from your first and second ones.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

FOLLOW THESE STEPS:

STEP 4: When you have completed your storyboards call for your instructor to come view them and help decide which one you will use for Objective 8, creating the still computer animation.

STEP 5: Write your name on the back of each storyboard, indicate which one you chose as your final design, and turn them in to your instructor at the end of the day's activities.

Continue Day 4 Activities by completing Objective 8.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

OBJECTIVE 8

Use the computer, the *Animator* program, and your choice of storyboards to create still animation for your instructor to grade.

TOOLS AND MATERIALS

- Storyboard

PROCEDURE

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 1: Turn on the computer and load the *Animator* program.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

FOLLOW THESE STEPS:

STEP 2: Use what you have learned during the previous days' activities about the *Animator* function keys to create a still animation using as many functions as possible.

You have 25 minutes to complete this activity. If you need to, you may consult the steps from previous day's activities for incorporating as many functions as possible into your drawing.

STEP 3: When you have finished drawing your still computer animation, call for your instructor to come and view it. DO NOT EXCEED YOUR 25 MINUTE TIME LIMIT.

IMPORTANT

Ask your instructor if you are to save your drawing to a diskette or the hard drive, and get instructions for these procedures. If you exit *Animator* before saving your animation, you will lose that work.

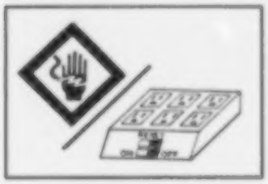
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

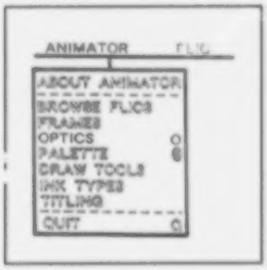
FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.



STEP 4: EXIT the *Animator* program and turn off the computer.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 4 ACTIVITIES

FOLLOW THESE STEPS:

STEP 5: When you finish, clean the work area and return tools and materials to their proper storage areas.

If you finish Day 4 Activities with time left over, you may begin Day 5 Activities.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 5 you should complete the following activity:

❶ Read Information Sheet

❷ Complete Objective 9

DAY 5 ACTIVITIES

SUMMARY OF ACTIVITIES

Reading Comprehension Skills:
- ♦ Gain factual information
- ♦ React to written material

Functional Reading Skills:
- ♦ Follow written instructions
- ♦ Interpret graphics and symbols

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5
ACTIVITIES

INFORMATION SHEET

Computer animation means less drawing for the artist. The computer can generate the art faster and reuse drawings. So, instead of the artist drawing each of the hundreds of cels (frames) that would be needed for a few minutes of film or videotape, the computer can perform these tasks. Animation uses approximately 24 to 30 frames per second of filmed or videotaped movement.

Because the computer has replaced time-consuming hand drawing, animation is finding new roles in assisting technology. Computers can be used to generate animation that simulates space and flight, education, medical research, engineering designs and operations, sports, and the laws and studies of the sciences.

Super-computers are capable of complex mathematical processes. These computers are powerful enough to perform fractal geometry. The greater mathematical capability will make it possible for animation design to be calculated mathematically and be input into the computer as mathematic formulas rather than actual drawings. This capability will again greatly reduce the

— continued —

time and labor of artists. Animation of this type will be more precise and accurate, thus improving the quality of computer animation tremendously.

Although current personal computers cannot produce the professional quality animation of movies at this time, it may be possible soon. The capability already exists, but is expensive and reserved for the larger super computers. With output devices like HDTV (High Definition Television) and computers capable of fractal geometry being used and produced, the costs will come down. Like today's personal computers, these newer, better models of the future will be available for many people someday.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

OBJECTIVE 9

Use the computer and *Animator* program to create a moving animation picture and to operate the following function keys:

- cel menu
    - clip
    - move
    - paste cel
- pic menu
    - clear
    - separate
- frame icon/arrows
- frames panel
    - set frame number
    - play flick
    - set play speed
- trace menu
    - insert tweens
    - erase guide
- T
- time select panel
    - preview
    - render

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

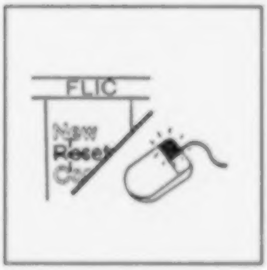
PROCEDURE

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 1: Turn on the computer and load the *Animator* program.

STEP 2: Move cursor to "FLIC" menu and "RESET" pulldown, and click the left mouse button.

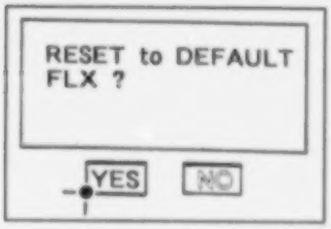


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

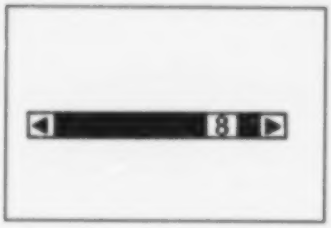
STEP 3: When the "RESET to DEFAULT FLX?" appears, move cursor onto the "YES" box and click the left mouse button.



RESET to DEFAULT FLX ?

STEP 4: Move cursor to "•" on Home panel menu and click the right mouse button.

The Set Brush Size slider bar appears.



STEP 5: Set Brush size thicker (for example 11) by clicking on size bar arrows.

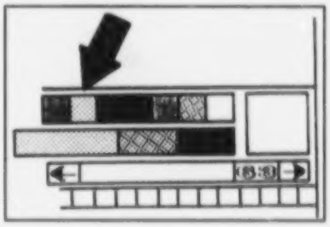
STEP 6: Return cursor to drawing area and click the right mouse button to return to the Home panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 7: Move cursor to green on the Color Palette and click the left mouse button.



STEP 8: With cursor on drawing area, click and hold the left mouse button to draw your initials. MAKE YOUR INITIALS ABOUT 2 INCHES HIGH.

NOTICE

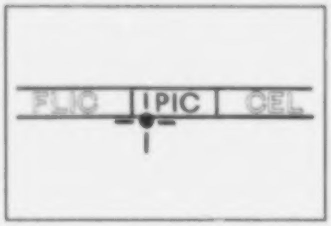
If you make a mistake or do not like the way your initials look, you can erase (CLEAR) the screen by following steps 9 and 10. If you like what you have drawn continue to Step 11.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

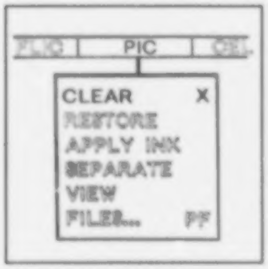
DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 9: Move cursor to "PIC" at the top of the Home panel screen.

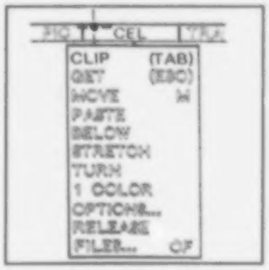


STEP 10: Move cursor to "CLEAR" on the pulldown menu that appears, and click the left mouse button.



Notice that this step clears the screen by erasing the current picture in the frame, but leaves your draw function set as you had it and ready to draw again. Continue to Step 11.

STEP 11: Move cursor to "CEL" at the top of the Home panel screen.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

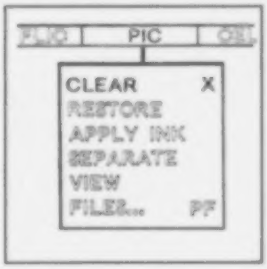
DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

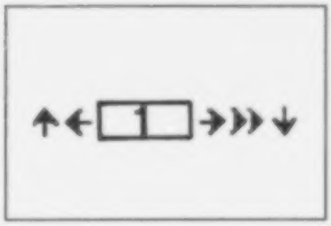
STEP 12: Move cursor to "CLIP" on the pulldown menu that appears, and click the left mouse button.

Notice the rotating dotted box around your initials. This shows you that the image is copied into the cel buffer.

STEP 13: Move cursor to "PIC" menu and "CLEAR" pulldown, and click the left mouse button.



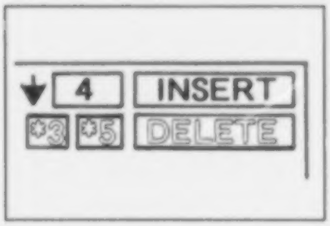
STEP 14: Move cursor to the number between the bars at the bottom of the Home panel screen (this is the frame icon) and click the right mouse button.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

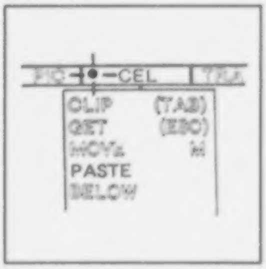


STEP 15: Move cursor to the "INSERT" button and click the left mouse button three times until the number "4" appears in the box to the left of "INSERT".

The number in the box should be "1" before you begin, so you will click the left mouse button on "INSERT" 3 times to add four total frames. When you insert frames, the content of the original frame stays the same and a copy becomes the next frame. What was in cel 2 then becomes cel 3, etc.

STEP 16: Return the cursor to the drawing area and click the right mouse button to return to the Home panel screen.

STEP 17: Move cursor to "CEL" at the top of the Home panel screen.



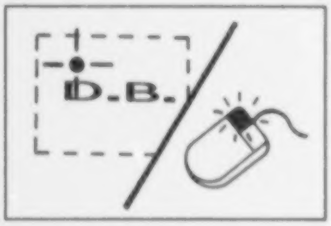
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

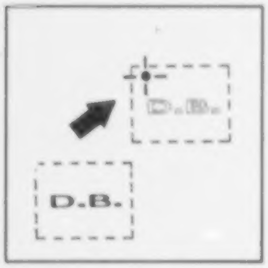
STEP 18: Move cursor to "PASTE" on the pulldown menu that appears, and click the left mouse button.

STEP 19: Move cursor into the area of your cel box (with initials) and click the left mouse button.



STEP 20: Move cursor to the top of the drawing screen and click the left mouse button.

This step moves and pastes the cel to this area (the top) of your screen.

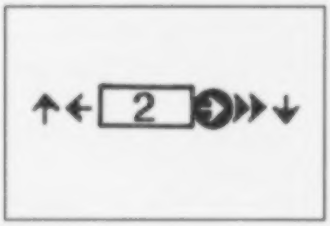


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 21: Move cursor to the frame forward arrow (>) (next to the Frame icon) at the bottom of Home panel menu, and click the left mouse button. DO NOT CLICK ON THE DOUBLE ARROWS (>>).

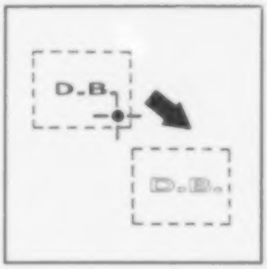


The number changes to "2" and this action sets your cel from step 20 as frame 2. The double arrows will play your animation, but you have not set the other frames, so you are not ready to click the double arrows yet.

STEP 22: Move cursor to "CEL" menu and "PASTE" pulldown, and click the left mouse button.

STEP 23: Move cursor into the area of your cel box (with initials) and click the left mouse button.

STEP 24: Move cursor to the bottom of the drawing screen to move the box; click the left mouse button to paste it.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

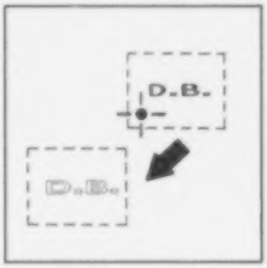
STEP 25: Move cursor to the frame forward arrow (>) (it is next to the "2" in the bar) at the bottom of Home panel menu, and click the left mouse button. DO NOT CLICK ON THE DOUBLE ARROWS (>>).

The number changes to "3" and this sets your cel from Step 24 as frame number 3.

STEP 26: Move cursor to "CEL" menu and "PASTE" pulldown, and click the left mouse button.

STEP 27: Move cursor into the area of your cel box (with initials) and click the left mouse button.

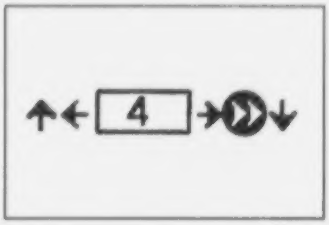
STEP 28: Move cursor to the left side of the drawing screen to move the box; click the left mouse button to paste it.



FOLLOW THESE STEPS:

STEP 29: Move cursor to the frame forward arrow (>) (it is next to the "3" in the bar) at the bottom of Home panel menu, and click the left mouse button. DO NOT CLICK ON THE DOUBLE ARROWS (>>).

The number changes to "4" and this sets your cel from Step 28 as frame number 4.



STEP 30: Move cursor to the double arrows (>>) on the frame icon at the bottom of the Home panel menu, and click the left mouse button. THIS WILL PLAY YOUR ANIMATION.

Notice how your initials move around the screen.

STEP 31: With cursor on the drawing area, click the right mouse button to stop the animation.

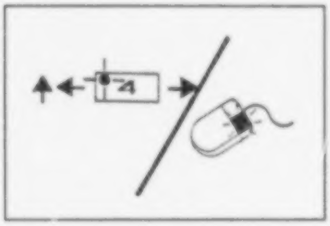
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

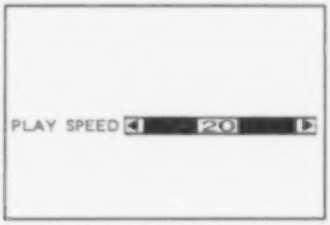
Steps 32 through 36 will allow you to change the speed of the animation.

STEP 32: Move cursor to the "3" (this number could also say "4") in the frame icon bar at the bottom of the Home panel menu, and click the right mouse button. DO NOT CLICK ON ANY ARROWS.



The Frames Panel appears.

STEP 33: Move the cursor to the "PLAY SPEED" bar and click the left mouse button until the number "20" appears.



The larger the number setting, the slower the animation will play.

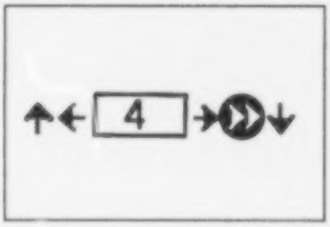
STEP 34: Move cursor to the drawing area and click the right mouse button to return to the Home panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 35: Move cursor to the double arrows (>>) on the frame icon at the bottom of the Home panel menu, and click the left mouse button. THIS WILL PLAY YOUR ANIMATION.

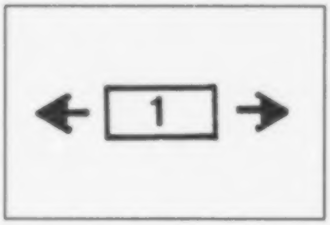


Notice the speed now of your initials moving around the screen.

STEP 36: With cursor on the drawing area, click the right mouse button to stop the animation.

IMPORTANT

The number "1" should appear in the frame icon box at the bottom of the Home panel menu. If it does not, move cursor to the forward frame arrow (>) and click the left mouse button until "1" appears.



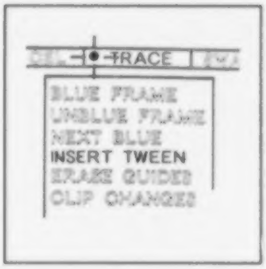
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

Steps 37 through 43 will allow you to insert "tweens" into your animation. Inserting tweens is a system of placing a sequence between two key frames that adds smoothness to the animated movement.

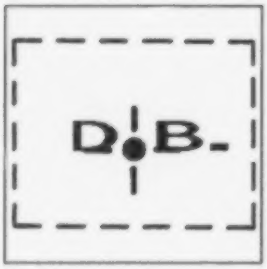
STEP 37: Move cursor to "TRACE" menu and "INSERT TWEEN" pulldown, and click the left mouse button.



STEP 38: Move cursor to "CEL" menu and "PASTE" pulldown, and click the left mouse button.

STEP 39: Move cursor into the area of your cel box (with initials) and click the left mouse button.

STEP 40: Move cursor between the Blue and Green letters (your guides) of your initials, and click the left mouse button to paste the cel.

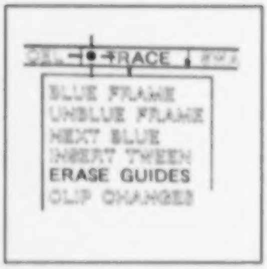


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

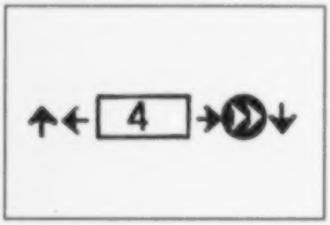
FOLLOW THESE STEPS:

STEP 41: Move cursor to "TRACE" menu and "ERASE GUIDES" pulldown, and click the left mouse button.



Notice that the colors of your initials return to normal.

STEP 42: Move cursor to the double arrows (>>) on the frame icon at the bottom of the Home panel menu, and click the left mouse button. THIS WILL PLAY YOUR ANIMATION.



Notice the speed and smoothness of the movement of your initials around the screen now.

STEP 43: With cursor on the drawing area, click the right mouse button to stop the animation.

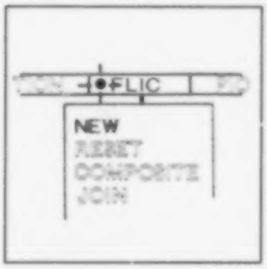
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

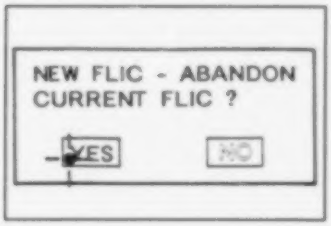
FOLLOW THESE STEPS:

Steps 44 through 63 will allow you to set your animation for 32 frames and view it running which you will need to know for later days' activities and for creating your own animation.

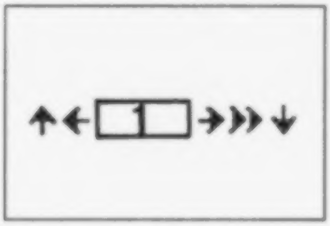
STEP 44: Move cursor to "FLIC" menu and "NEW" pulldown, and click the left mouse button.



STEP 45: When "NEW FLIC - ABANDON CURRENT FLIC?" appears, move cursor onto "YES" and click the left mouse button.


NEW FLIC - ABANDON CURRENT FLIC ?

STEP 46: Move cursor to Frame icon at bottom of Home panel menu, and click the right mouse button to enter the Frames Panel.

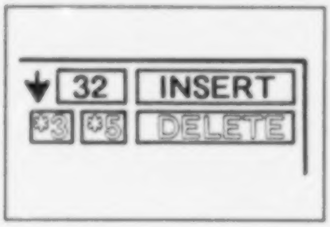


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 47: Move cursor to the "INSERT" and click the right mouse button.



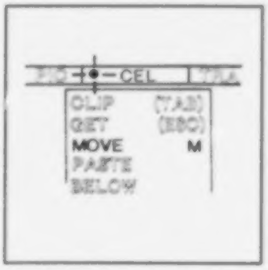
A message box appears asking for "The total number of frames you want inserted?".

STEP 48: Click the right mouse button on the arrow (<>) until 32 appears in the box.

STEP 49: Move cursor to "OK" and click the left mouse button.

STEP 50: With cursor on the drawing area, click the right mouse button to return to the Home panel screen.

STEP 51: Move cursor to "CEL" menu and "MOVE" pulldown, and click the left mouse button.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

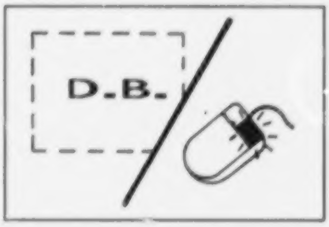
FOLLOW THESE STEPS:

STEP 52: Move cursor into the area of your cel box (with initials) and click the left mouse button.

STEP 53: Move cursor to the top of the screen and click the left mouse button to paste the cel.

STEP 54: Move cursor to "CEL" menu and "MOVE" pulldown, and click the left mouse button.

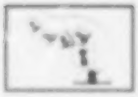
STEP 55: Step 54 should verify that cel is at the top of the screen. If it is, click the right mouse button.



STEP 56: Move cursor to "CEL" menu and "PASTE" pulldown, and click the left mouse button.

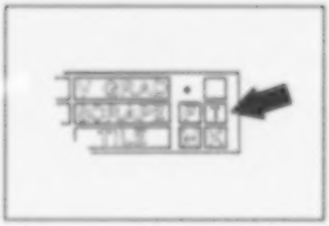
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES



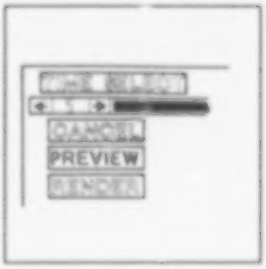
FOLLOW THESE STEPS:

STEP 57: Move cursor to the "T" on the bottom Home panel menu and click the left mouse button.



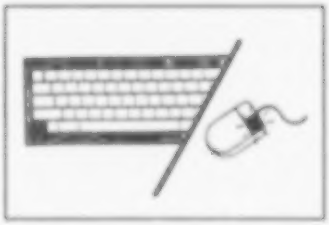
The Time Select Panel appears for Steps 58 through 60.

STEP 58: Move cursor to "PREVIEW" on the Time Select Panel and click the left mouse button.



Notice the movement on the screen. Preview allows you to see the full visual effect of each frame moving (in operation). The speed will not be as fast as that of the final playback.

STEP 59: With the cursor on the drawing area, click and hold the right mouse button or press any key on the keyboard to cancel "PREVIEW".

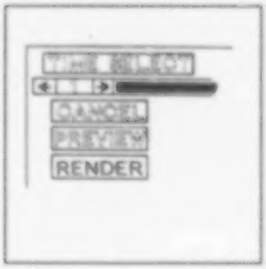


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

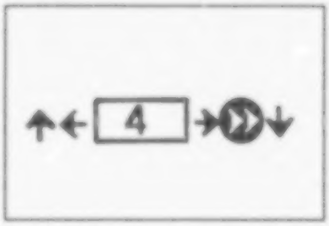
STEP 60: Move cursor to "RENDER" on the Time Select panel and click the left mouse button.



Notice the movement on the screen now. Render allows you to see the full visual effect of each frame in operation at normal speed.

STEP 61: With cursor on the drawing area, click the right mouse button to return to the Home panel screen.

STEP 62: Move cursor to the double arrows (>>) on the frame icon at the bottom of the Home panel menu, and click the left mouse button. THIS WILL PLAY YOUR ANIMATION.



STEP 63: With cursor on the drawing area, click the right mouse button to stop the animation.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

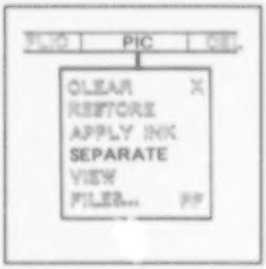
DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

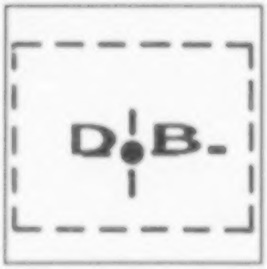
Steps 64 through 72 will allow you to set the V GRAD color system for your animation.

STEP 64: Move cursor to "V GRAD" and click the left mouse button.

STEP 65: Move cursor to "PIC" menu and "SEPARATE" pulldown, and click the left mouse button.



STEP 66: Move cursor into the drawing area and inside the green letter, and click the left mouse button.

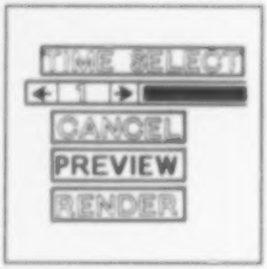


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

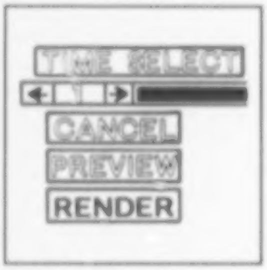
FOLLOW THESE STEPS:

STEP 67: Move cursor to "PREVIEW" on the Time Select Panel and click the left mouse button.



Notice the movement and color on the screen. Preview allows you to see the full visual effect of each frame moving (in operation). The speed will not be as fast as that of the final playback.

STEP 68: Move cursor to "RENDER" and click the left mouse button.



Notice the movement on the screen now. Render allows you to see the full visual effect of each frame in operation at normal speed.

STEP 69: With the cursor on the drawing area, click and hold the right mouse button or press any key on the keyboard to cancel "RENDER".

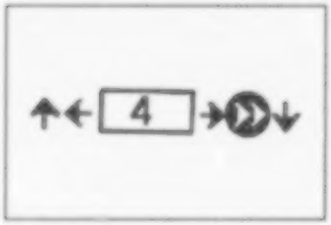
STEP 70: With cursor on drawing screen, click the right mouse button to return to the Home panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

STEP 71: Move cursor to the double arrows (>>) on the frame icon at the bottom of the Home panel menu, and click the left mouse button. THIS WILL PLAY YOUR ANIMATION.



STEP 72: When the animation stops, move cursor to the drawing area and click the right mouse button.

You should have time left to practice what you have learned today. You may also practice using the various function keys introduced in previous days' activities.

Tomorrow you will begin creating your 32 frame animation that will be graded, and you should use as many Animator functions as possible.

When you feel that you have mastered these Animator function keys, continue with Step 73.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 5 ACTIVITIES

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 73: EXIT the *Animator* program and turn off the computer.

STEP 74: When you complete Objective 9, return all materials to their proper storage area and clean your work area.

If you finish Day 5 Activities with time left over, you may begin Days 6 and 7 Activities.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Days 6 and 7 you should complete the following activities:

➊ Complete Objective 10

➋ Complete Objective 11

DAYS 6 - 7 ACTIVITIES

SUMMARY OF ACTIVITIES

Creative Thinking/Problem Solving Skills:
- Apply intuitive thinking techniques
- Transfer knowledge and training to new situations
- Develop an action plan
- Create a finished product

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

Use the computer and the *Animator* program to create a 32 frame moving animation for your instructor to grade.

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 1: Turn on the computer and load the *Animator* program.

DAYS 6 - 7 ACTIVITIES

OBJECTIVE 10

PROCEDURE

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAYS 6 - 7 ACTIVITIES

FOLLOW THESE STEPS:

STEP 2: Use what you have learned during the previous days' activities about the *Animator* function keys to create a 32 frame moving animation.

IMPORTANT

Before exiting *Animator* on either Day 6 or 7, complete Objective 11 to save your animation, so you can begin again tomorrow where you stop today. If you do not save your animation, you will lose all of your work from today.

At the end of Day 6, or when your animation is complete and checked by your instructor, proceed to Objective 11.

STEP 3: When you have completed your animation, call your instructor to check your work.

You may create more than one animation if time permits.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAYS 6 - 7 ACTIVITIES

OBJECTIVE 11

Use the computer to save your computer animation to a diskette.

TOOLS AND MATERIALS

- Computer with *Animator* program loaded on hard drive
- Keyboard, mouse, surge protector
- Diskette

PROCEDURE

FOLLOW THESE STEPS:

STEP 1: Get a blank diskette from your instructor.

STEP 2: Insert the diskette into the Drive A slot and, if you are using a 5¼" diskette, close the drive door latch.

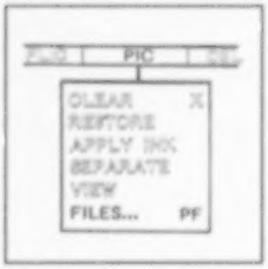
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAYS 6 - 7 ACTIVITIES

FOLLOW THESE STEPS:

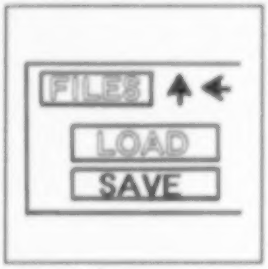
STEP 3: Move cursor to "PIC" menu and the "FILES" pulldown, and click the left mouse button.

The Files Panel appears. You can also select "FILES" from the "FLIC" menu, and the Files Panel will appear.

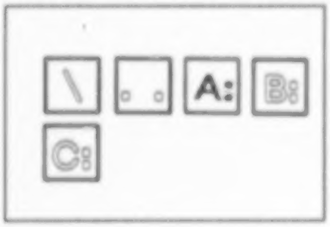


STEP 4: Move cursor to "SAVE" and click the left mouse button.

The File Selector box appears.

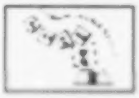


STEP 5: Move cursor to "A:" box and click the left mouse button.



TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

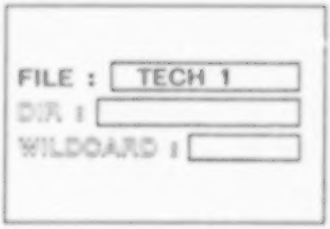
DAYS 6 - 7 ACTIVITIES



FOLLOW THESE STEPS:

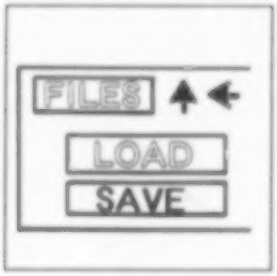
STEP 6: Move cursor to end of ".GIF" in the "File:" box, that appears, click the left mouse button, and then press **BACKSPACE** on the keyboard to erase the "untitled.GIF" file name.

STEP 7: In the "FILE:" box go to the keyboard, type in your file name, and press the **ENTER** key.



FILE : TECH 1
DIR :
WILDCARD :

STEP 8: When the "SAVE FILE ...?" box appears, move cursor to the "YES" box and click the left mouse button, or press **ENTER** on the keyboard.



FOLLOW THESE STEPS:

The Drive A light will come on while the computer is saving your file.

IMPORTANT

DO NOT REMOVE the floppy diskette or open the drive door while the light is on. Doing so will damage the diskette and could cause you to lose your animation file.

STEP 9:	Remove the floppy diskette ONLY when the light goes off.
STEP 10:	Return the diskette with your saved animation to your instructor.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAYS 6 - 7 ACTIVITIES

FOLLOW THESE STEPS:

WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 11: EXIT the *Animator* program and turn off the surge protector.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAYS 6 - 7 ACTIVITIES

FOLLOW THESE STEPS:

STEP 12: When you finish, clean the work area and return all materials to their proper storage areas.

If you finish Days 6 and 7 Activities with time left over, you may begin Day 8 Activities.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

On Day 8 you should complete the following activities:

❶ Complete any unfinished assignments.

❷ Read Impact Statements.

❸ Complete Career Search Activity.

❹ Complete Posttest.

DAY 8 ACTIVITIES

SUMMARY OF ACTIVITIES

Job Search/Selection Skills

- Analyze personal occupational preferences
- Investigate requirements for an occupation

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

ENVIRONMENTAL IMPACT

Computer animation makes it possible to understand and even predict the impacts particular events or processes can have in the environment. For example, news analysts on television used animation to show the impact of the oil fires set in Kuwait during the Gulf War. Animation techniques made it possible to show the oil slick in the Persian Gulf as it existed at the time and also its predicted expansion. Animation was also used to indicate the impact of the smoke from the oil-well fires.

Computer animation can also be used to test the success of ecological experiments before investing time and money in implementing them. For example, animation tests and designs were created to measure the potential success of a procedure for reforesting Yellowstone National Park after the serious fires there.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

SOCIAL/CULTURAL IMPACT

Because computer animation programs have made animation techniques available to so many people, many social/cultural effects occur as new applications for animation are discovered.

Animation programs can make learning more fun. Many types of instructional videos are animated for schools, business, and industry. Learning to use animation programs involves mastering computer operations which can also help people develop valuable technical skills.

Animation models of research projects, engineering designs, and scientific studies that are now possible allow scientists and technicians to work out problems in the plans before any are actually encountered in the field. Animation models exist for surgeons to practice surgical techniques and improve their skills before operating on people.

Because animation offers the opportunity for creative expression, animation programs are used in therapy with people who have various handicaps, including the hearing-impaired, the mentally handicapped, or people with behavior and emotional problems. These people can discover new ways to express themselves and develop technical skills as well.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

ECONOMIC IMPACT

Computers now perform many of the animation tasks that artists used to have to do by hand. Because using computers saves time and money, computer animation programs have helped to reduce the cost of animation. Movie makers can afford more and better special effects. Makers of animated films and cartoons can afford to make more and longer programs.

Now that animation is more affordable and a very popular form of entertainment, even small businesses and industries are able to incorporate animation into their training programs and advertising campaigns. These professionals are counting on the success of using animation to help them attract employees, sell products, and improve customer relations.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

POLITICAL IMPACT

Federal laws have established agencies to monitor and provide guidelines for the content of films and television programs today. Such agencies include the Federal Communications Commission (FCC) and Federal Trade Commission (FTC). While the FCC looks at many features of programming, the FTC is primarily concerned with advertising on television.

As animation becomes more frequent on television and in the movies because of reduced costs and increased availability, these government agencies carefully monitor the appropriateness of these animated programs, commercials, and effects. For example, film makers are using animation as an opportunity to include more special effects. But many effects are considered violent or otherwise inappropriate for certain audiences, so laws regulate at what age someone should be allowed to see certain movies or at what time of day certain television programs should be shown.

Besides these government sponsored groups, individuals have formed special interest groups to address their particular concerns. Especially active and concerned with animation is Action for Children's Television (ACT). Members of this group watch children's programming which often includes animated features.

— continued —

They complain that cartoons do not have enough educational value and too often are no more than 30 minute commercials aimed at children.

ERGONOMIC IMPACT

Ergonomics means developing products and systems that are comfortable for people to use and that really fit their needs. Computer animation is an excellent example of a such a technological development.

The other impact statements have indicated many benefits for society and the environment that computer animation has made possible. These statements also named many products and uses for animation which indicates that people are becoming comfortable with using computers and animation programs. More people are able to experiment with animation than have been possible before the computerized systems. With more people using animation, even more uses and tools will be developed. These innovations offer the potential for further improving animation and its benefits to people.

Animation can fit more than just professional or entertainment needs. Computer animation offers people the opportunity to try a new art form. People can find personal enjoyment in applying their artistic talents electronically.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

CAREER SEARCH ACTIVITY

INSTRUCTIONS

Using the Career Search Abstracts, read about two occupations listed below. Select two of the occupations that sound most appealing to you. On separate pieces of paper, list the two occupations you selected and tell why. Remember to write using complete sentences, proper grammar, and correct spelling. Give the sheets to your instructor.

RELATED CAREERS

- Commercial Artist
- Computer & Peripheral Equipment Operator
- Visual Artist

COMMERCIAL ARTIST

Nature of the Occupation

Commercial or graphic artists apply their skills and artistic vision to a variety of media to produce art that serves a client's needs. They create artwork to illustrate or promote products, services, and ideas, as well as artwork used primarily to improve appearance or attract attention. They plan, design, and draw illustrations for various media, such as billboards, brochures, catalogs, books, magazines, newspapers, television, and packaging.

Duties may include but are not limited to the following:

- Confer with clients to plan design and determine budget, presentation approaches, and styles
- Assign and direct staff members to develop design concepts
- Examine designs, sketches, or illustrations
- Determine nature, size, and arrangement of materials
- Select best techniques to produce desired effect
- Produce samples for client approval
- Direct and instruct photographers or illustrators in execution of design concepts
- Inspect and review final production and suggest any needed improvements
- Present production to clients for approval

Occupation Specialties

(Dot codes in parenthesis)

Art Directors (141.031-010) formulate concepts and supervise workers engaged in executing layout designs for artwork and copy to be presented by such visual communication media as magazines, books, newspapers, television, posters, and packaging.

Cartoonists (141.061-010) draw comic or editorial cartoon and comic strips to amuse readers and illustrate or comment upon news events, advertising, stories, or articles.

Graphic Designers (141.061-018) design art and copy layouts for material to be presented by such visual communication media as books, magazines, newspapers, television, packaging, and advertising.

Illustrators (141.061-022) draw or paint illustrations for use by various media to explain or adorn the printed or spoken word.

Medical and Scientific Illustrators (141.061-026) make sketches and construct 3-dimensional models to illustrate surgical and medical research procedures, anatomical and pathological specimens, clinical disorders, micro-organisms, and plant and animal tissue.

Working Conditions

Commercial artists may work alone or in a team with the art director giving general supervision. Many illustrators are freelance artists who service regular accounts along with new or one-time customers.

Working conditions may vary by the type of artwork and the employer. Generally, commercial artists work in clean, well-lighted, temperature-controlled areas in office buildings, department stores, art studios, advertising agencies, or printing or industrial plants. Medical and scientific illustrators frequently spend time in operating rooms observing and sketching surgical procedures or in laboratories containing specimens and equipment that they use to prepare drawings. Commercial artists may spend much of their time standing or sitting at a drawing board or work table.

Salaried commercial artists usually work 35 to 40 hours a week. Employers generally provide all supplies and equipment. Commercial artists may be required to work irregular hours or overtime during emergencies and to meet deadlines. However, many jobs in this field can lead to free-lancing or to flexible hours.

Worker Requirements

You should like:

- Activities concerned with communicating ideas to people
- Activities which require creative imagination
- Activities bringing satisfaction from seeing your work in print

You should be able to:

- Reason logically and create new ideas
- Understand the meaning of words and use language effectively
- Make decisions based on personal judgment
- Interpret feelings, ideas, or facts artistically
- Accept criticism of your work
- Influence people's opinions, attitudes, or judgments
- Understand the 2-dimensional representation of objects

OCCUPATION SPECIALTIES

DOT CODES

141.031-010	Art Director
141.061-010	Cartoonist
141.061-018	Graphic Designer
141.061-022	Illustrator
141.061-026	Medical And Scientific Illustrator

SOC CODE: 322, 325

COMMERCIAL ARTIST

- Perceive details in objects or drawings and see differences in their shapes or shadings
- Coordinate and plan entire activities, if an art director
- Move your fingers and handle small objects accurately

Physically you must:
- Use your hands and fingers fully
- Coordinate the movements of eyes and hands or fingers
- See well, naturally or with correction, and distinguish colors
- Talk and hear, if an art director or a graphic designer

Special Requirements:

Most employers prefer 4-year art school graduates with technical and commercial skills. Graphic arts applicants should demonstrate talent, training, and experience. Artists in scientific and medical illustration need specialized training.

Opportunities for Experience:

Related postsecondary programs may offer experience. Consider working on the school yearbook, newspaper, stage sets, bulletin boards, or posters as experience. For more experience, create posters, layouts, or illustrations for church and community groups. Part-time or summer jobs in commercial art studios or military service may help.

Earnings and Advancement

Commercial artists' earnings depend on skill, education, type of artwork, geographic area, and type and size of employer. Earnings of a free-lance commercial artist may vary with the artist's individual fees and reputation, as well as the nature and amount of artwork sold.

Earnings:

Nationally, in 1990, fine artists and commercial artists who usually worked full time earned median salaries of about $21,733 per year. The middle 50 percent earned between $16,303 and $30,431 per year. The top 10 percent earned more than $40,213. The bottom 10 percent earned less than $13,042 per year.

Inexperienced illustrators employed by the Federal Government started at the GS-5 level with annual earnings in 1990 of $16,305. They may advance to the GS-12 level with a salary of $35,825.

Career Ladder for this Occupation may look like this:
- Art Director
- Illustrator
- Trainee

Beginning commercial artists usually need on-the-job training and are assigned routine work. Advancement depends on individual talent, creativity, and education. Experienced commercial artists may eventually become art directors, if they have managerial ability, or open their own studios.

Employment and Outlook

Nationally, there were approximately 216,000 fine artists and commercial artists employed in 1988. Employment is expected to grow faster than the average for all occupations through 2000 as the areas of advertising and design continue to expand with the economy. Commercial artists with average ability and little specialized training are expected to encounter keen competition for beginning jobs and have limited advancement opportunities.

The demand for commercial artists may vary according to specialization or type. The demand for free-lance artists is expected to increase, while jobs for art directors and graphic designers will be fewer and open only to experienced, highly talented, and creative artists. One area of growth is in visual advertising such as television graphics, packaging displays, and poster and window displays. Another is industrial design which is expected to require more qualified artists to do 3-dimensional work with engineering concepts.

Commercial artists held about 1,125 jobs in Oklahoma during 1986. That number is expected to increase to 1,173 by 1992 which represents a 4.44 percent change. Job openings each year for commercial artists will equal approximately 38, with 30 of those due to replacements and 8 created through new jobs.

Related Education and Training

Level(s) of education and training usually needed for this occupation:
- On-the-job training
- Technical junior or community college
- College bachelor's degree

School subjects helpful in preparing for this occupation include:
- College Preparatory
- Crafts
- Custodial Service
- Arts
- Photography
- Graphic Arts

More Sources of Information

- National Association of Schools of Art and Design
  11250 Roger Bacon Dr., #5
  Reston, VA 22090

- The Society of Illustrators
  128 East 63rd Street
  New York, NY 10021

- Association of Medical Illustrators
  2692 Huguenot Springs Road
  Midlothian, VA 23113

- The Graphic Artists Guild
  11 West 20th Street
  New York, NY 10011

COMPUTER & PERIPHERAL EQUIPMENT OPERATOR

Nature of the Occupation

Computer and peripheral equipment operators monitor and control electronic data processing systems which are used to process business, scientific, engineering, or other data.

Duties may include but are not limited to the following:

- Determining appropriate equipment from job set up instructions
- Setting control switches, selecting and loading data and materials needed for the computer run
- Operating computers
- Monitoring the computer and equipment for errors and breakdowns
- Determining reason for errors or breakdown
- Maintaining computer time log

Occupation Specialties

(Dot codes in parenthesis)

Computer-Peripheral Equipment Operators (213.382-010) control and monitor peripheral machines such as card-tape converters and high-speed printers used to transfer data from cards and tapes and convert stored data to printed records.

Auxiliary-Equipment Operators (213.685-010) tend machines which sort, assemble, separate, convert or reproduce computer data. These machines include bursting machines, collators, and interpreters.

Working Conditions

Computer and peripheral equipment operators work with or around other people in well-lighted, comfortable surroundings. As computers must be maintained in a controlled temperature setting, operators usually work in air-conditioned rooms. Much time is spent standing and walking about monitoring and loading the computers. Work areas may be noisy.

Computer operators usually work a 5-day, 40-hour week. Overtime, holidays and weekend work may be required to meet specific deadlines. As many computers are operable 24 hours a day, shift schedules may also be required.

Computer operators may join a union or professional association. Associations may include the American Federation of Information Processing Societies, the Data Processing Management Association and the Association for Computing Machinery. Members of an association or union may pay periodic membership fees.

Tools, Equipment and Materials used may include:

- Input Devices Such as Card or Paper Tape Readers, Magnetic Tape Units and Optical Scanners
- Output Devices Such as High Speed Printers and TV Displays
- Other Devices Such as Consoles, Control Panels, Converters, Programs, Punched Cards, Magnetic Tapes, Flow Charts, Job Streams, Procedures Charts and Related Items

Worker Requirements

You should like:

- Activities which involve the use of machines, processes, and methods
- Activities of a routine, definite and organized nature

You should be able to:

- Work accurately and logically
- Work under pressure
- Follow instructions

OCCUPATION SPECIALTIES

DOT CODE:

213.362-010	Computer Operator
213.382-010	Computer-Peripheral Equipment Operator
213.685-010	Auxiliary-Equipment Operator

SOC CODE: 461

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COMPUTER & PERIPHERAL EQUIPMENT OPERATOR

Physically you must:
- Be able to use arms and hands
- See well, either naturally or with correction

Special Requirements:
Small firms generally require at least six months experience in data processing while larger firms offer their own training programs.

Opportunities for Experience:
Co-op programs may be available through vocational centers, local high schools, and communitiy colleges. All branches of the military service provide opportunities for experience.

Methods of Entry:
Methods of entering the field include applying directly to employers and taking civil service examinations. Positions may also be located by consulting newspaper want ads, school placement offices or the state employment office.

Earnings and Advancement

Earnings depend upon the employer, operator's experience, and seniority.

Earnings:
Nationally, in 1990, computer operators earned an average weekly salary of $416, for an annual salary of $21,642. Peripheral equipment operators earned an average weekly salary of $289 for an annual salary of $15,037. In 1990, the beginning salary for computer operators, with a high school diploma, employed by the Federal Government was about $11,468. The beginning salary of those with one year of college was $13,000. Applicants with operations experience started at higher salaries.

Operators employed in manufacturing, transportation and public utilities had higher earnings than those in finance and retail trade.

Fringe Benefits:
Depending on the employer, computer operators receive paid vacations and holidays; life, accident, disability and hospitalization insurance; retirement plans and sick pay. These benefits are usually paid for, at least in part, by the employer.

Career Ladder for this Occupation may look like this:
- Supervisor
- Lead Computer Operator
- Senior Computer Operator
- Computer Operator
- Trainee

Computer operator trainees advance to higher positions through a combination of training and experience.

Employment and Outlook

There were approximately 275,000 computer and 42,000 peripheral equipment operators employed nationally in 1988. Employment of computer and peripheral equipment operators is expected to rise mush faster than the average as the use of computers expands.

Computer and peripheral equipment operators held about 3,274 jobs in Oklahoma during 1986. That number is expected to increase to 3,649 by 1992 which represents a 11.45 percent change. Job openings each year for computer and peripheral equipment operators will equal approximately 100, with 37 of those due to replacements and 63 created through new jobs.

Related Education and Training

Level(s) of education and training usually needed for this occupation:
- High school diploma with vocational education
- Technical junior or community college

Level(s) of education and training also available for this occupation:
- On-the-job training
- High school diploma or G.E.D.

School subjects helpful in preparing for this occupation include:
- Algebra
- Accounting
- Business Data Processing
- Typing
- Computer Science
- Bookkeeping
- Cooperative Education Office Distribution

More Sources of Information

- Data Processing Management Association
  505 Busse Highway
  Park Ridge, IL 60068

- Association for Computing Machinery
  11 West 42th Street
  New York, NY 10036

- Association for Computer Operations Management
  742 East Chapman Avenue
  Orange, CA 92666

VISUAL ARTIST

Nature of the Occupation

Visual artists create abstract works or realistic images of objects, people, nature, places, and events, with a wide variety of methods and materials, to communicate ideas, thoughts, and feelings. They may use oils, watercolors, acrylics, pastels, chalk, charcoal, pencils, pen and ink, silkscreen, clay, plaster, or other media, including computers, to create works of art.

Duties may include but are not limited to the following:

FINE ARTISTS
- Expressing feelings in art
- Specializing in one or two media
- Selling works to stores, galleries, museums, or collectors

GRAPHIC ARTISTS
- Serving clients' needs with art in advertising, design, packaging, illustration, or cartoons

Occupation Specialties

(Dot codes in parenthesis)

Cartoonists (141.061-010) draw political cartoons, newspaper comics, or comic books.

Fashion Artists (141.061-014) draw stylish illustrations of new clothing fashions.

Illustrators (141.061-022) create pictures for books, magazines, billboards, posters, and record albums.

Medical and Scientific Illustrators (141.061-026) draw precise illustrations of machines, plants, animals, or parts of the human body for business and educational purposes.

Set Illustrators (141.061-030) build and decorate sets for movies, television, and theatrical productions.

Motion Picture Cartoonists (141.081-010) draw series of pictures for animated films shown on TV and in movies.

Working Conditions

Graphic and fine artists generally work in art studios, at home, or in offices. Graphic artists work 40-hour weeks but often work overtime to meet frequent deadlines. Many graphic artists also freelance for occasional clients. Independent visual artists also spend considerable time and effort recruiting potential clients. Some fine artists spend time out of doors in search of subjects.

Tools, Equipment and Materials used may include:
- Airbrushes
- Acid
- Oil Paints
- Watercolors
- Acrylics
- Clay
- Plaster
- Brushes & Matte Knives
- Canvas & Gesso
- Pen & Ink
- Wood
- Stone
- Plastic
- Sponges & Rags
- Models & Still-Life Arrangements
- Power & Hand Chisels
- Computers
- Knives
- Chalk
- Charcoal
- Pastels
- Varnish
- Turpentine & Paint Thinner
- Pencils
- Paper, Cardboard & Board
- Armatures
- Concrete
- Metal
- Wire

Worker Requirements

You should like:
- Expressing emotions
- Working alone and with others
- Translating ideas into visual form
- Satisfying others' expectations

You should be able to:
- Analyze and visualize an artistic task into details
- Communicate well with clients and co-workers

OCCUPATION SPECIALTIES

DOT CODE

141.061-010	Cartoonist
141.061-014	Fashion Artist
141.061-022	Illustrator
141.061-026	Illustrator, Medical & Scientific
141.061-030	Illustrator, Set
141.081-010	Cartoonist, Motion Picture

SOC CODE: 3250

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VISUAL ARTIST

- Use various media
- Work until a project is perfect
- Work against deadlines

Physically you must:
- See well, naturally or with correction
- Have the stamina and health to work late

Special Requirements:
Good preparation for a visual arts career is usually a four-year post-secondary art school program. This training is absolutely essential for scientific and medical illustrators. To demonstrate and exhibit the skills gained, the art works produced in art schools should be collected in a portfolio, including samples of the artist's best work. Before a candidate gains entry into the graphic art field or other art employment, the portfolio will be carefully examined by prospective employers.

Opportunities for Experience:
Many visual artists freelance part-time while in art school, so that they gain both experience and a professional portfolio. Entry level jobs in advertising and publishing require routine mechanical or paste-up work, but gradually artists are given more responsibility if they show promise.

Methods of Entry:
Visual artists apply directly to employers such as retailers, advertising and graphic design agencies, book publishers, newspapers, governments, manufacturers, and the motion picture industry. Positions may also be found through newspaper ads, school placement offices, and state employment offices.

Earnings:
In 1990, salaried visual artists who usually worked full time had median salaries of $21,700 a year. The middle 50% earned between $16,300 and $30,400 a year, while the top 10% earned more than $40,200 and the bottom 10% earned less than $13,000. Because of the nature of this occupation, salaries fluctuate over a wide range.

Self-employed visual artists range from part-timers employed in other work to well established graphic, freelance, and fine artists. Part-timers must often accept low fees, while established artists can demand very high compensation.

Fringe Benefits:
Depending on the employer, visual artists on salary can receive paid vacations and holidays, life, accident, and hospitalization insurance, retirement plans, and sick pay. These benefits are paid for, at least in part, by the employer. Self employed artists, of course, must arrange for their own ways of meeting these costs.

Career Ladder for this Occupation may look like this:
- Partner/Own Business
- Partner
- Creative Director
- Art Director
- Assistant Art Director
- Mechanical Artists
- Freelancer

Self-employed artists may advance as their work circulates and their reputation spreads. Some freelancers remain freelancers, free to choose the type of work they do. Publishers choose these freelancers for specific kinds of illustrations.

Employment and Outlook

Visual artists held about 216,000 jobs in 1988. The 40 percent who were self-employed were either freelancers or fine artists. The main employers for all visual artists are advertising and commercial art firms, publishers, manufacturers, department stores, the motion picture industry, and government. By far, the most visual artists are concentrated in New York City, followed by Boston, Chicago, Los Angeles, and San Francisco.

Visual art work is expected to grow faster than the average through the year 2000. Emphasis is increasing on visual appeal in packaging, marketing, and other communication. Fine artists may find more demand from corporations as well as affluent individuals. Competition will continue to be keen, but fresh talent is usually rewarded.

Visual artists held about 1,169 jobs in Oklahoma during 1986. That number is expected to increase to 1,221 by 1992, which represents a 4.27 percent change. Job openings each year for visual artists will equal approximately 50, with 41 of those due to replacements and 9 created through new jobs.

Related Education and Training

Level(s) of education and training usually needed for this occupation:
- High school diploma or G.E.D.
- Technical junior or community college

More Sources of Information

- Graphic Artists Guild
  11 West 20th Street
  New York, NY 10011

- Society of Illustrators
  128 East 63rd Street
  New York, NY 10021

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TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

DAY 8 ACTIVITIES

POSTTEST

INSTRUCTIONS

You will need to a computer scan sheet or card to record your answers to the following Posttest. Be sure to write your name, the title of the TLA, the date, and the class period on the computer scan sheet or card using a #2 pencil. Use rows 11-20 to record the answers to the Posttest. If your answers will be hand-scored, use a blank sheet of notebook paper to record your answers and number your answers 11-20.

SPELLING TEST INSTRUCTIONS

Use rows 21-30 on the test card. If the word is spelled correctly, mark (a) on the computer score sheet or card. If the word is spelled incorrectly, mark (b) on the test card. Be sure to use a #2 pencil and make your marks dark. If your answers will be hand-scored, use a blank sheet of notebook paper to record your answers and number your answers 21-30.

Get Posttest questions from your instructor.

When you finish the Posttest, return the test form and the computer scan card or notebook paper to your instructor.

If you finish Day 8 Activities with time left over, you may begin the Skunk Works Activity.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

BACKGROUND

The term *Skunk Works* comes from an engineering division of the 3M Company. In the late 1960s a group of engineers at 3M wanted to design a new product, but the managers of the company would not give them the money for research. So they decided to design the product anyway, then try to convince the company to make it. Whenever the engineers could grab a few extra minutes from their regular assignments, they worked on the new product. In early 1969 they presented it to the marketing division of 3M, and the company has been selling it ever since. The product: Velcro fasteners.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

SKUNK WORKS CHALLENGE

Your challenge in this Skunk Works is to use the computer and *Animator* program to create a 30 frame animated drawing using the following *Animator* function keys:

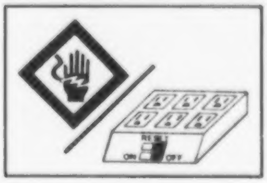
- cel menu
    - clip
- frame icon
    - insert frames
    - play animation
- animator menu
- optics panel
    - element menu
        - cel
        - flic
    - spin
    - center/axis slider bar
    - wireframe
    - use
    - path
    - spline
    - clear track
    - time select panel
        - preview
        - render
- flic
    - new
    - reset

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

FOLLOW THESE STEPS:

PROCEDURE



WARNING

ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 1: Turn on the computer and load the *Animator* program.

STEP 2: Choose any color from Color Palette.

STEP 3: Draw a 2 to 3 inch box in the upper left-hand corner of the drawing screen.

STEP 4: Select "CEL" menu and "CLIP" pulldown.

STEP 5: Using frame icon, "INSERT" 30 frames. You will need to use the arrows (<>).

STEP 6: Return to the Home Panel screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

FOLLOW THESE STEPS:

STEP 7: Select "ANIMATOR" menu and "OPTICS" pulldown.

The Optics Panel appears for Steps 8 through 13. See flow chart on next page.

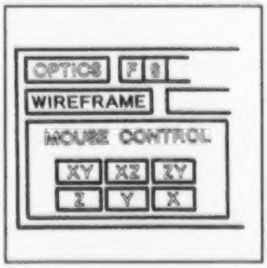
STEP 8: Select "PRESET" menu and "TWIRL" pulldown.

This action allows you to set your picture to turn. The "Preset" option sets graphics to turn 360 degrees along specific axes (imaginary lines through the figure indicating movement).

STEP 9: Select "ELEMENT" menu and "CEL" pulldown.

STEP 10: Select "WIREFRAME".

NOTE: *The image on your drawing screen will briefly move.*



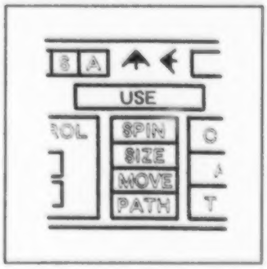
TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

FOLLOW THESE STEPS:

STEP 11: Select "USE".

The Time Select Panel appears for Steps 12 through 14.



STEP 12: On the Time Select Panel, select "PREVIEW".

STEP 13: With cursor in the drawing area, click the right mouse button.

STEP 14: Select "RENDER".

STEP 15: When the screen image stops moving, return to the Home panel screen.

STEP 16: Play your animation using the frame icon double arrows (>>).

You can stop the animation play by clicking the right mouse in the drawing area.

FOLLOW THESE STEPS:

Experiment with "PRESETS" menu on Optics Panel. Select "SPIN", "WHIRL", "SPIN/SMALL", AND "SQUASH". Remember to use "WIREFRAME" to view the screen movement.

STEP 17: Select "FLIC" menu and "NEW" pulldown.

STEP 18: When "NEW FLIC — ABANDON CURRENT FLIC?" appears, click the left mouse button on "YES".

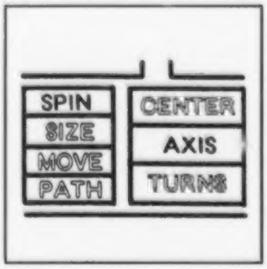
STEP 19: Select frame icon and "INSERT" 15 frames.

STEP 20: Return to the Home panel screen.

STEP 21: Select "ANIMATOR" menu and "OPTICS" pulldown.

The Optics Panel appears for Steps 22 through 25.

STEP 22: Select "SPIN" and "AXIS".

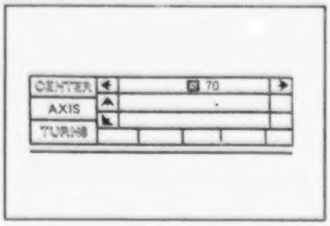


TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

FOLLOW THESE STEPS:

STEP 23: Set Axis' Slide bar to "70" degrees. You will need to use the arrows (<>).



STEP 24: Select "WIREFRAME".

STEP 25: Select "USE".

The Time Select Panel appears for Steps 26 and 27.

STEP 26: Select "PREVIEW".

STEP 27: Select "RENDER".

STEP 28: When the screen image stops moving, return to the Home panel screen.

STEP 29: Play your animation using the frame icon double arrows (>>).

STEP 30: Select "FLIC" menu and "RESET" pulldown.

STEP 31: Draw another box in the upper right-hand corner of the drawing screen.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

SKUNK WORKS

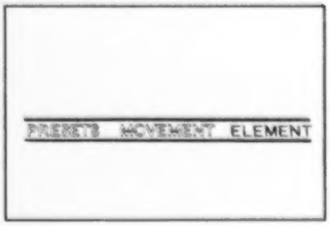
FOLLOW THESE STEPS:

STEP 32: Select the frame iccn and "INSERT" 30 frames.

STEP 33: Select "Animator" menu and "Optics" pulldown.

The optics panel appears for Steps 34 through 44.

STEP 34: Select "ELEMENT" menu and "FLIC" pulldown.



STEP 35: Select "PATH" and "SPLINE".

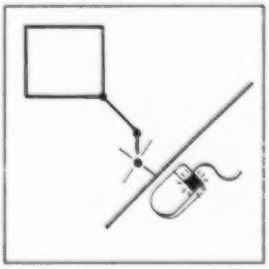
STEP 36: Move cursor to one corner of your box in the drawing screen, click and hold the left mouse button.

Notice that as you move the mouse a line moves with your cursor across the screen.

FOLLOW THESE STEPS:

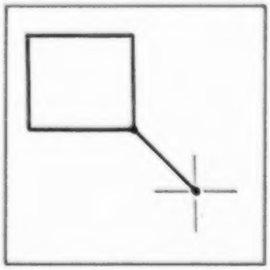
Steps 37 and 38 will allow you to set points on the screen that will determine where your image moves when you play it.

STEP 37: To set points for your image to move across the screen: move the cursor to any other point on the screen and click the right mouse button to set that position.



Only the line moves this time, not your image. Notice that once you click the right mouse button the line stays from your first starting point to the second point that you clicked on. This means that position is set. Even after setting this first position, you can still move the line again from this second position to another and set it by clicking the right mouse button.

STEP 38: Repeat Step 37 to set at least four additional points.



FOLLOW THESE STEPS:

STEP 39: Click the right mouse button to turn off this function.

STEP 40: Select "WIREFRAME".

STEP 41: Select "USE".

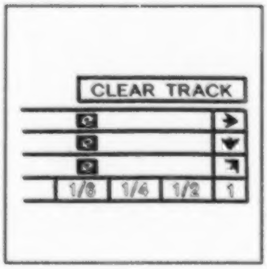
The Time Select Panel appears for Step 42.

STEP 42: Select "PREVIEW".

STEP 43: When the screen image stops moving, return to the Optics Panel screen.

STEP 44: Select "CLEAR TRACK".

This step resets all the motion settings to original starting point (or default settings).



Also experiment with "POLYGON", "SAMPLED", AND "CLOCKED" on the Optics panel before creating your 30 frame animation. When you feel that you have mastered these Animator functions, complete your 30 frame animation. When your animation is complete, continue with Step 45.

FOLLOW THESE STEPS:

STEP 45: Save your animation before exiting the *Animator* program.

WARNING

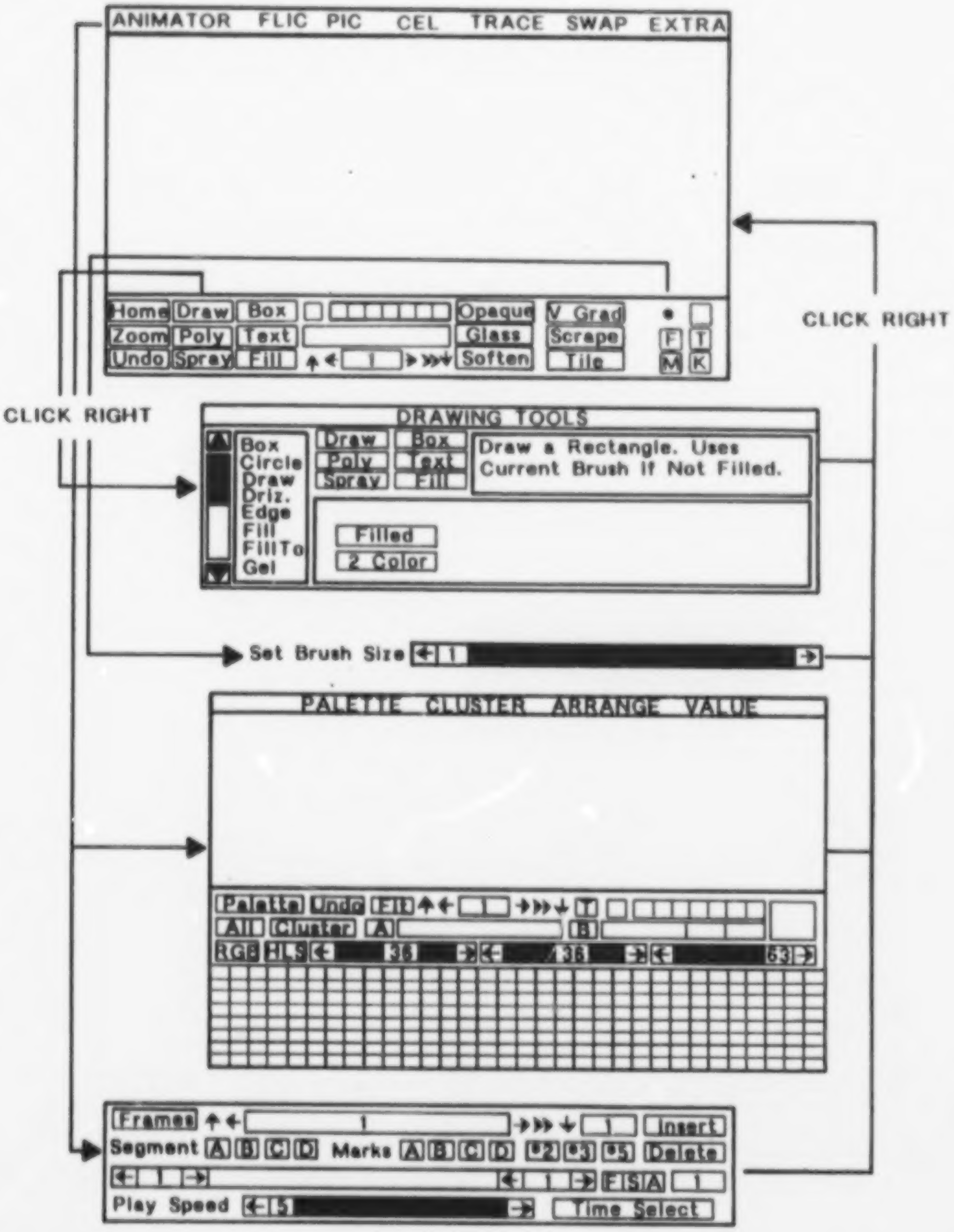
ELECTROCUTION POSSIBLE. Surge protector carries ELECTRICAL VOLTAGE that can cause death or injury. Do NOT touch electrical plugs or insert ANYTHING into the receptacles. Avoid danger by using only the two buttons indicated.

STEP 46: EXIT the *Animator* program and turn off the computer.

STEP 47: When you finish, clean the work area and return tools and materials to their proper storage area.

TECHNOLOGY EDUCATION INTRODUCTION TO ANIMATION

MENU FLOW CHART


ANIMATOR FLIC PIC CEL TRACE SWAP EXTRA
Home Draw Box Opaque V Grad
Zoom Poly Text Glass Scrape F T
Undo Spray Fill 1 Soften Tile M K
CLICK RIGHT
CLICK RIGHT
DRAWING TOOLS
Box
Circle
Draw
Driz.
Edge
Fill
FillTo
Gel
Draw Box
Poly Text
Spray Fill
Draw a Rectangle. Uses Current Brush If Not Filled.
Filled
2 Color
Set Brush Size 1
PALETTE CLUSTER ARRANGE VALUE
Palette Undo Fit 1 T
All Cluster A B
RGB HLS 36 36 63
Frames 1 1 Insert
Segment A B C D Marks A B C D *2 *3 *5 Delete
1 1 F S A 1
Play Speed 5 Time Select

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